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BY CHARLES S. NEWHALL

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THE TREES OF NORTHEASTERN AMERICA

THE SHRUBS OF NORTHEASTERN AMERICA

BY

CHARLES S. NEWHALL

Illustrations from Original Drawings

Two Volumes in One

G. P. PUTNAM'S SONS
NEW YORK AND LONDON
The Knickerbocker Press
1908

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The Knickerbocker Press, New York

THE TREES

OF

NORTHEASTERN AMERICA

BY

CHARLES S. NEWHALL

With an Introductory Note by

NATH. L. BRITTON, E.M., PH.D., COLUMBIA COLLEGE

THIRTEENTH IMPRESSION

I said I will not walk with men to-day,
  But I will go among the blessèd trees,—
Among the forest trees I 'll take my way,
  And they shall say to me what words they please.

And when I came among the trees of God,
  With all their million voices sweet and blest,
They gave me welcome. So I slowly trod
  Their arched and lofty aisles, with heart at rest.

Then all around me as I went,
Their loving arms they lightly bent,
And all around leaf-voices low
Were calling, calling soft and slow.

* * * * * * *

I could not fail to know
The words they whispered so,
Nor could I onward go
From words so sweet and low.

—From *The Trees.*

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PREFACE.

"C——, if you and I were to meet a man on the street and ask him his name, he could tell us. I wish a tree could do as much. Here are splendid specimens all around us, and I don't know one of them."

"Get a book that will help you."

"I cannot find such a book. I can find no book which, in simple fashion, will so describe the tree, from its foliage and bark and style, that I can recognize it."

"Then I will make one for you."

The trees described in the following pages include all the native trees of Canada and the Northern United States east of the Mississippi River. Mention has also been made of the more important of the introduced and naturalized species. The work has been so arranged that any given specimen can be readily found by help of the GUIDE on page 1.

My chief authority for the geographical distribution of the species is Sargent's report in the Tenth Census

of the United States; for the scientific nomenclature, Nath. L. Britton, E.M., Ph.D.

I am greatly indebted to Professors Thomas C. Porter, of Lafayette College, and N. L. Britton, of Columbia College, for valuable aid and suggestions; also to Rev. S. W. Knipe, of Oceanic, N. J.

INTRODUCTORY NOTE.

COLUMBIA COLLEGE HERBARIUM,
NEW YORK, *May* 12, 1890.

DEAR SIRS:—I have been interested in glancing over the manuscript of Mr. Newhall's book on our native trees, and am much pleased to learn that it is to be published. There is great need of such a popular work. It will do much good in supplying information to our people about some of the common things around them, and this in an attractive manner.

Yours very truly,

N. L. BRITTON.

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GUIDE.

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Leaves, simple:*

- alternate
  - edge entire. Go to *I* under A
  - " toothed. " *II* " A
  - " lobed
    - Lobes, entire. Go to *III (a)* under A
    - Lobes, toothed. " *III (b)* " A
- opposite
  - edge entire. Go to *I* under B
  - " toothed. " *II* " B
  - " lobed
    - Lobes, entire. Go to *III (a)* under B
    - Lobes, toothed. " *III (b)* " B
- indeterminate. Go to *I* under C

Leaves, compound:

- feather-shaped
  - alternate, edge
    - entire. Go to *I* under D
    - toothed. " *II* " D
  - opposite, edge
    - entire. Go to *I* under E
    - toothed. " *II* " E
- hand-shaped
  - opposite, edge toothed. Go to *I* under F

*NOTE.—The leaflets of a compound leaf can be distinguished from a simple leaf by the absence of leaf-buds from the base of their stems.

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NOTE.—Names in *italics* are given also under another division.

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DESCRIPTION OF TREES.

NOTE 1.—Those species are considered trees (in distinction from shrubs) which, as the rule, spring from the ground with a single branching trunk.

NOTE 2.—The arrangement of the illustrations and descriptions under each section is according to the natural order of the genera.

NOTE 3.—In using the guide and the following leaf-illustrations it should be remembered that leaves from vigorous young sprouts are not usually the best specimens. It is seldom that two leaves, even upon the same mature branch, exactly agree; but they follow the type, while often the younger growth varies from it.

NOTE 4.—When describing the trees, items that are specially helpful in determining the species are given in *italics*.

TREES WITH SIMPLE LEAVES

LEAVES ALTERNATE

(EDGE ENTIRE)

A I

Genus MAGNOLIA, L. (Magnolia.)

From "Magnol," the name of a botanist of the seventeenth century.

Fig. 1.—Cucumber Tree, Mountain Magnolia. *M. acuminàta, L.*

Leaves, SIMPLE; ALTERNATE; EDGE ENTIRE.

Outline, long oval. *Apex*, pointed. *Base*, pointed.

Leaves, five to ten inches long, thin, dark green above; green beneath and slightly downy; growing along the branch and not simply in a cluster at its end.

Bark, dark and rough.

Flowers, three to six inches across, bluish or yellowish-white, abundant and fragrant. May, June.

Fruit, in a cylinder-shaped bunch, two to three inches long, and somewhat resembling a small cucumber.

Found, in rich woods from Western New York to Southern Illinois and southward, and in cultivation. Its finest growth is in the southern Alleghany Mountains.

A tree sixty to ninety feet high, with a straight trunk and rich foliage. The wood is durable, soft, and light. Used for cabinet-work, for flooring, for pump-logs, and water-troughs. As in other magnolias the juice is bitter and aromatic.

Fig. 2.—Sweet Bay, Swamp Laurel, Small Magnolia. *M. glauca, L.*

Leaves, SIMPLE; ALTERNATE; EDGE ENTIRE.

Outline, long oval or slightly reverse egg-shape. *Apex*, slightly blunt-pointed. *Base*, pointed.

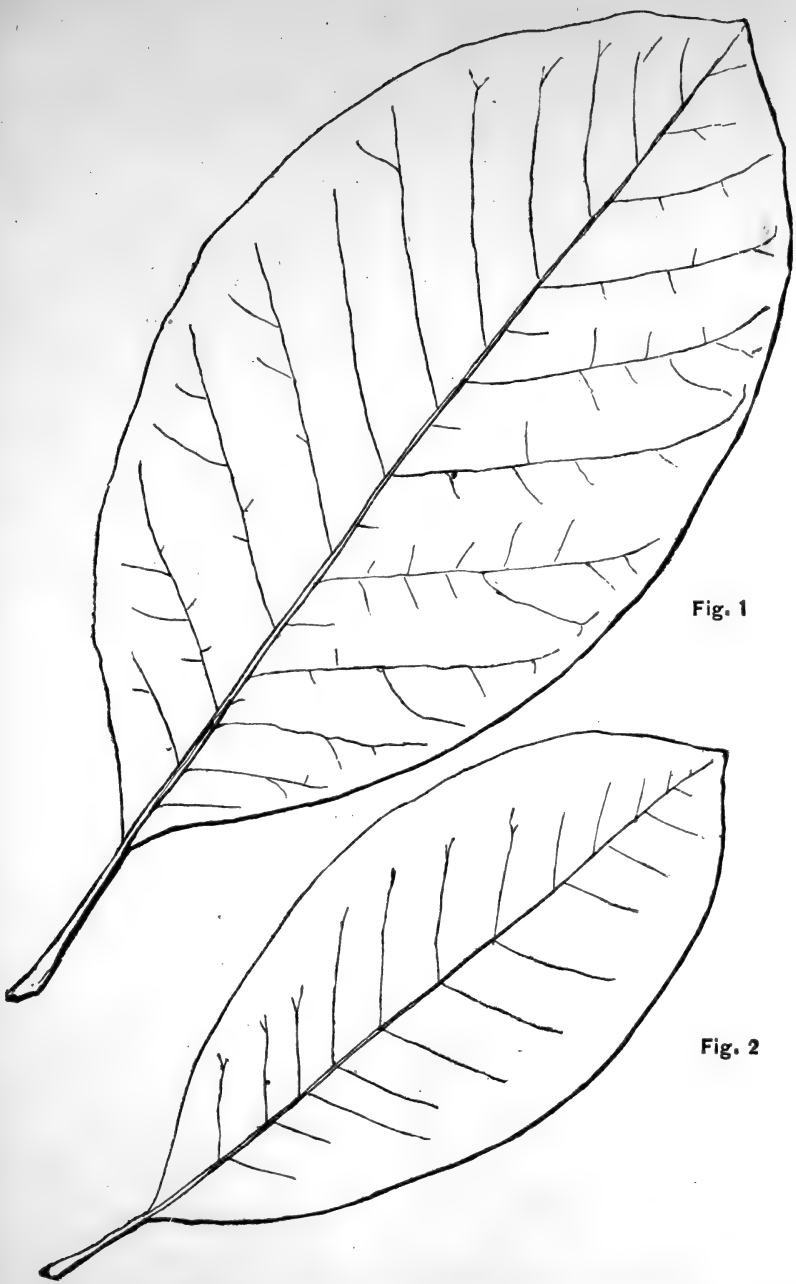


Fig. 1.—Cucumber Tree. (M. acuminàta, L.)
Fig. 2.—Sweet Bay. (M. glauca, L.)
NATURAL SIZE.

Leaf, about three to six inches long, thick and smooth; dark green and polished above; white below; the middle rib green and distinct; the side ribs slight and indistinct.

Bark of trunk, smoothish, light gray, aromatic and bitter.

Flowers, large (two to three inches wide), white, at the ends of the branches, very fragrant. June, July.

Fruit, bright red berries, at first in small cone-like clusters, then hanging by slender threads. September.

Found, in swampy ground, from Massachusetts southward, usually near the coast.

A small tree (often a bush), four to twenty-five feet high, or higher southward, where its leaves are evergreen. All parts of the tree (and it is the same with the other magnolias) have an intensely bitter, aromatic juice, which is stimulating and tonic.

Fig. 3.—Umbrella Tree, Elkwood. *M. tripètala, L.*

Leaves, SIMPLE; ALTERNATE; EDGE ENTIRE.

Outline, long oval or slightly reverse egg-shape. *Apex*, short, sharp-pointed. *Base*, pointed.

Leaves, twelve to thirty-six inches long, six to eight inches wide; rather dark green above; lighter beneath; silky when young, but soon smooth; growing in clusters at the ends of the branches.

Bark, smoothish and light.

Flowers, seven to eight inches across, at the ends of the branches, white, and fragrant. May, June.

Fruit, in a cylinder-shaped bunch, four to five inches long, and rose-colored as it ripens.

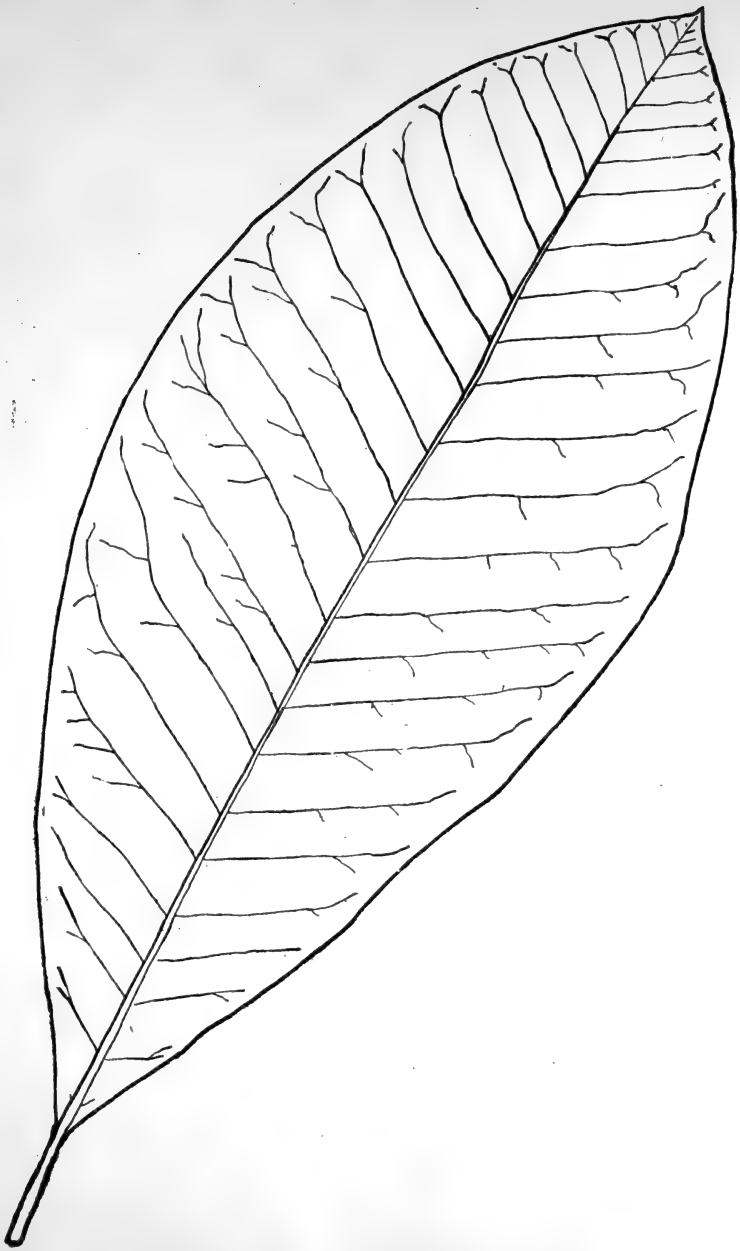


Fig. 3.—Umbrella Tree. (M. tripètala, L.)
ONE THIRD NATURAL SIZE.

Found, in Southeastern Pennsylvania and southward along the Alleghany Mountains, and in cultivation.

A tree twenty to thirty feet high, with irregular branches, and light, soft wood. As in other magnolias the juice is bitter and fragrant.

Genus ASÌMINA, Adans. (Papaw.)

Fig. 4.—Papaw, Custard Apple. *A. trìloba (L.), Dunal.*

Leaves, SIMPLE; ALTERNATE; EDGE ENTIRE.

Outline, long, reverse egg-shape. *Apex*, pointed, in small leaves, sometimes rounded. *Base*, taper-pointed or slightly rounded.

Leaf, five to ten inches long, thin, rusty downy when young, soon becoming smooth and polished.

Bark, silvery-gray, smooth and polished; young shoots downy.

Flowers, one and a half inches wide; dark to light, in drooping clusters, appearing with the leaves. March, April.

Fruit, about three inches long by one and a half inches thick, egg-shape, yellow, about ten-seeded, fragrant, sweet, and edible. October.

Found, from Western New York to Southern Iowa and southward.

A small tree of unpleasant odor when bruised, ten to twenty feet high (or often only a bush) and densely clothed with its long leaves.

Fig. 4.—Papaw. A. triloba (L.), Dunal.
LEAF, NATURAL SIZE. FRUIT, TWO THIRDS NATURAL SIZE.

Genus CERCIS, L. (Red Bud.)

From a Greek word meaning "shuttle," because of the shuttle-shaped pod.

Fig. 5.—Red Bud, Judas Tree. *C. Canadènsis, L.*

Leaves, SIMPLE; ALTERNATE; EDGE ENTIRE.

Outline, round heart-shape. *Apex*, tapering and rather blunt, sometimes with a short bristle. *Base*, heart shape.

Leaf-stem, smooth and swollen at each end into a sort of knob.

Leaf, usually about four to five inches long and wide; rather thin; smooth above and below; with seven prominent ribs radiating from the end of the leaf-stem.

Flowers, reddish, acid, usually abundant in small clusters along the branches; appearing before the leaves. March to May.

Fruit, a small, many-seeded, flat pod, winged along the seed-bearing seam. *Seeds*, reverse egg-shape.

Found, in rich soil, Western Pennsylvania, westward and southward. Common in cultivation.

A small and fine ornamental tree, with long, flat-leaved branches.

The name "Judas tree" is traditional. "This is the tree whereon Judas did hang himself, and not the elder tree, as it is said."

Genus NYSSA, L. (Sour Gum.)

From the name of a water nymph, because of the location of the original species.

Fig. 6.—Sour Gum, Black Gum, Pepperidge, Tùpelo. *N. sylvàtica, Marsh.*

Leaves, SIMPLE; ALTERNATE; EDGE ENTIRE.

Outline, oval or reverse egg-shape. *Apex*, pointed. *Base*, pointed.

Leaf-stem, slightly hairy when young.

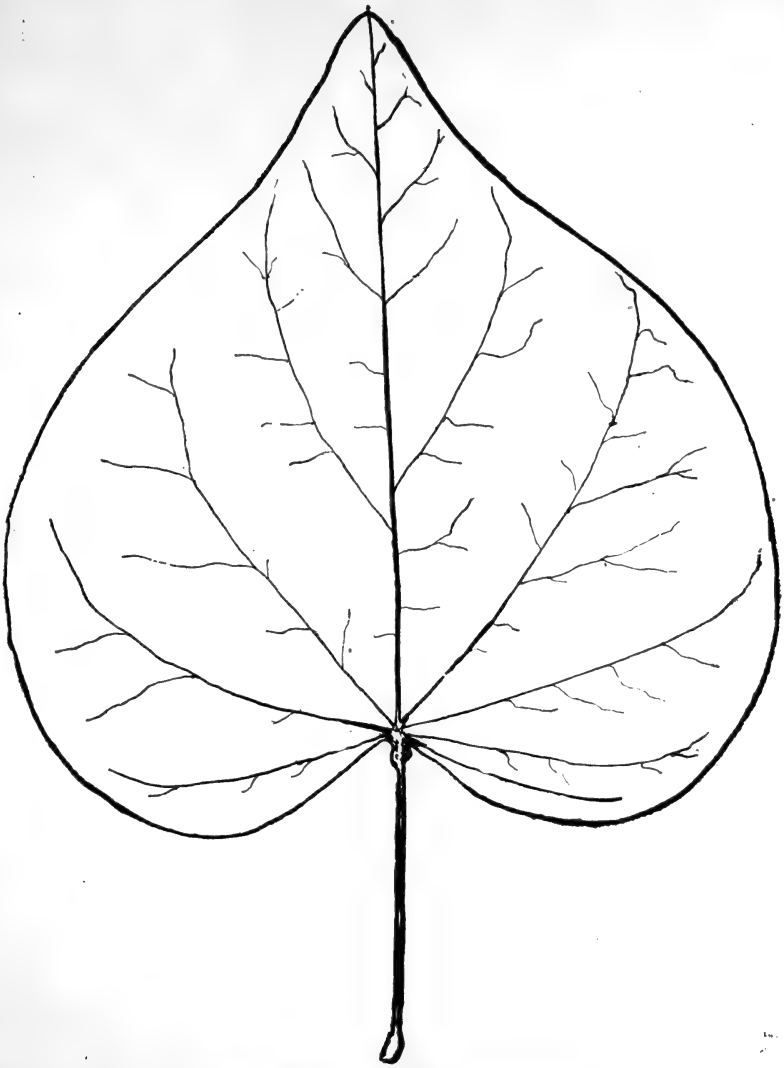


Fig. 5.—Red Bud. (C. Canadènsis, L.)
NATURAL SIZE.

Leaf, two to five inches long; usually about half as broad; dark green and very shining above, especially when old; light green and shining below; thick, tough, and firm. Middle rib slightly hairy when young; side ribs rather indistinct and curved.

Bark, grayish and often broken into short sections.

Fertile flowers, small, in clusters of three to eight on slender stems. April, May.

Fruit, nearly one half inch long; bluish-black when ripe; egg-shape or oval; acid and rather bitter until "frosted." *Stone*, oval, somewhat pointed at each end, slightly flattened, and with three or four blunt ridges on each side. September.

Found, from Southern Maine to Michigan, and southward to Florida and Texas.

A tree twenty to forty feet high (larger southward), with flat, horizontal branches. The wood, even in short lengths, is very difficult of cleavage, and so is well fitted for beetles, hubs of wheels, pulleys, etc. Its leaves are the first to ripen in the fall, changing (sometimes as early as August) to a bright crimson.

I was commenting, one day, to a reverend doctor and professor on the frequent reference to this tree in stories and anecdotes of Southern life, when he fluently quoted:

"Possum up a gum-tree,
Cooney in de holler,
Nigger in de corn-field,
Don't yer hear him holler."

A better version changes the last two lines:

"Possum up de gum-tree,
Cooney in de hollar.
Fetch him down, little boy,
Give yer half a dollar."

The professor added the explanation that the opossums climb the tree in search of its fruit.

Fig. 6.—Sour Gum. (N. sylvàtica, Marsh.)
NATURAL SIZE.

Genus DIOSPYROS, L. (Persimmon.)

From two Greek words meaning fruit of Jove.

Fig. 7.—Persimmon. *D. Virginiana, L.*

Leaves, SIMPLE; ALTERNATE; EDGE ENTIRE.

Outline, long oval or long egg-shape. *Apex*, pointed. *Base*, pointed or rounded.

Leaf, three to five inches long, thickish; dark and smooth, usually shining, above; below dull, with the ribs curved and irregular and minutely downy. On the upper surface the ribs are quite indistinct, except as the leaf is held toward the light when they appear almost transparent. In the same position the leaf is seen also to be edged with a slight delicate fringe (appearing in the dried leaf like a line of yellow light).

Bark of trunk dark and rough.

Flowers, greenish-yellow and small, at the base of the leaf-stems. June.

Fruit, about one inch in diameter, rounded, nearly stemless, orange-red when ripe, with about eight large flat seeds. After frost it is of very pleasant flavor, before, exceedingly "puckery."

Found, from Connecticut southward to Florida and westward to Southeastern Iowa.

A tree twenty to sixty feet high; sometimes, at the South, more than one hundred feet high. The wood is hard and close-grained; the bark tonic and astringent.

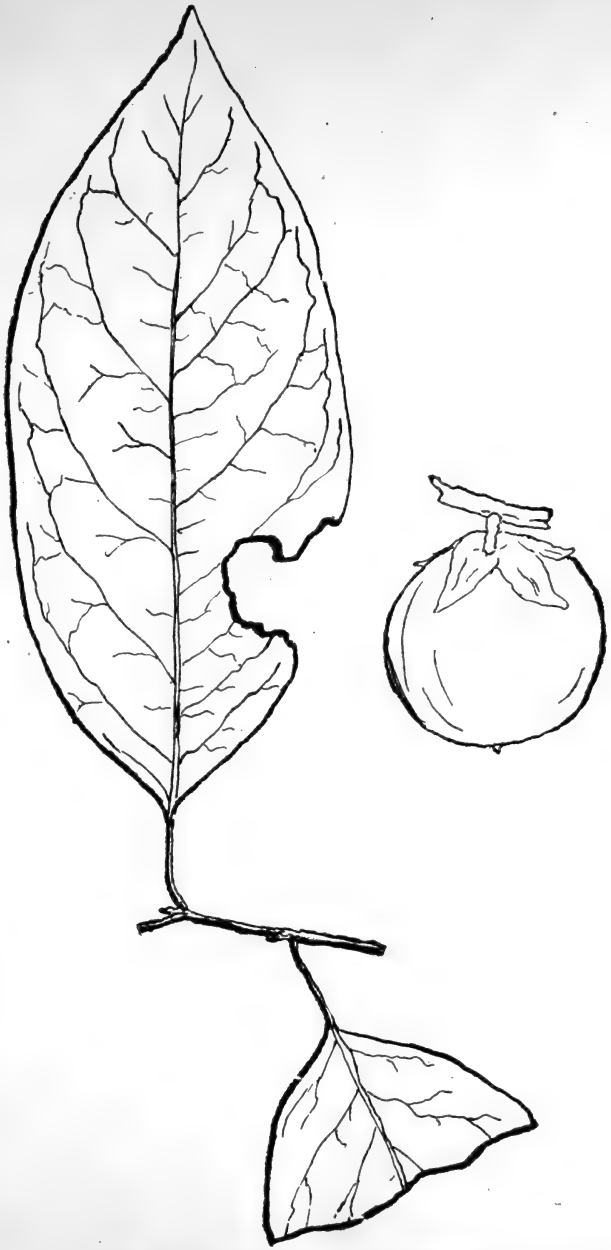


Fig. 7.—Persimmon. (D. Virginiàna, L.)
NATURAL SIZE.

Genus SASSAFRAS, Nees. (Sassafras.)

Fig. 8.—Sassafras. *S. officinàle, Nees.*

Leaves, SIMPLE; ALTERNATE; EDGE ENTIRE OR LOBED.

Outline, when the edge is entire usually oval or egg-shape; when lobed usually broader and reverse egg-shape. *Base*, pointed or wedge-shape. *Apex* of the leaf or of the lobes rounded or slightly blunt-pointed.

Leaf, variable in size, dark, thin, smooth; rather shining above; the lobes, when present, two or three in number and usually more or less bulging, with the hollows always rounded.

Flowers, greenish-yellow, in clusters. May, June.

Fruit, oval, one-seeded, blue, with a reddish, club-shaped stem; pungent.

Bark, obliquely and curiously furrowed and broken, gray without, reddish within; young twigs yellowish.

Found, from Southwestern Vermont, southward and westward.

A tree fifteen to fifty feet high with light and soft wood. All parts of the tree have a pleasant, spicy taste and fragrance. From the bark of the roots a powerful aromatic stimulant is obtained.

NOTE.—See *Alternate-leaved Dogwood*, with its genus, Section B, *I.*, p. 136.

NOTE.—See *Willow Oaks*, with their genus, Section A, *III. (a)*, pp. 126–128.

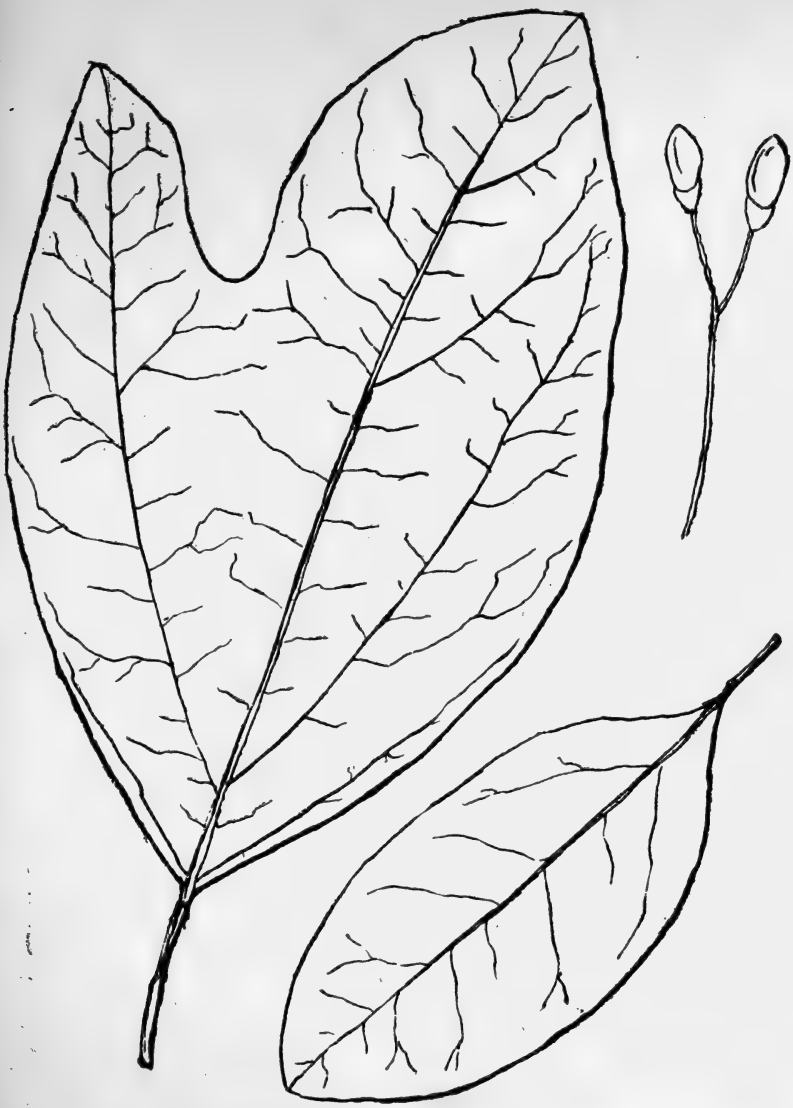


Fig. 8.—Sassafras. (S. officinàle, Nees.)
NATURAL SIZE.

TREES WITH SIMPLE LEAVES

LEAVES ALTERNATE

CONTINUED

(EDGE TOOTHED)

A II

Genus TILIA, L. (Basswood.)

Fig. 9.—Basswood, American Linden, Whitewood, Lime Tree, Bee Tree. *T. Americàna, L.*

Leaves, SIMPLE; ALTERNATE, SOMEWHAT IRREGULARLY VERY SHARP-TOOTHED.

Outline, rounded, often very broad. *Apex*, pointed. *Base*, strongly heart-shaped.

Leaf, usually about three to four inches wide, four to five inches long; sometimes much larger; rather thick, very smooth and shining above; with small tufts of reddish hairs in the angles of the ribs below; and often with the ribs themselves hairy.

Bark of the trunk very thick; on the young branches dark brown.

Fruit, gray-downy, ovate, the size of small peas, clustered on a long stem of which the lower half is joined to half the length of a narrow, leaf-like bract, usually with a tapering base.

Found, in rich woods, from British America southward to Virginia and along the Alleghany Mountains and westward.

A straight-trunked tree, sixty to eighty feet high (often unbranching to half its height) and two to four feet in diameter. Its very tough inner bark is used for mats and coarse rope. The wood is white and soft and clear of knots. It is much used for wooden ware, in cabinet-work, and for the panelling of carriages, though now less esteemed than the tulip tree for these uses, owing to its liability to crack in bending.

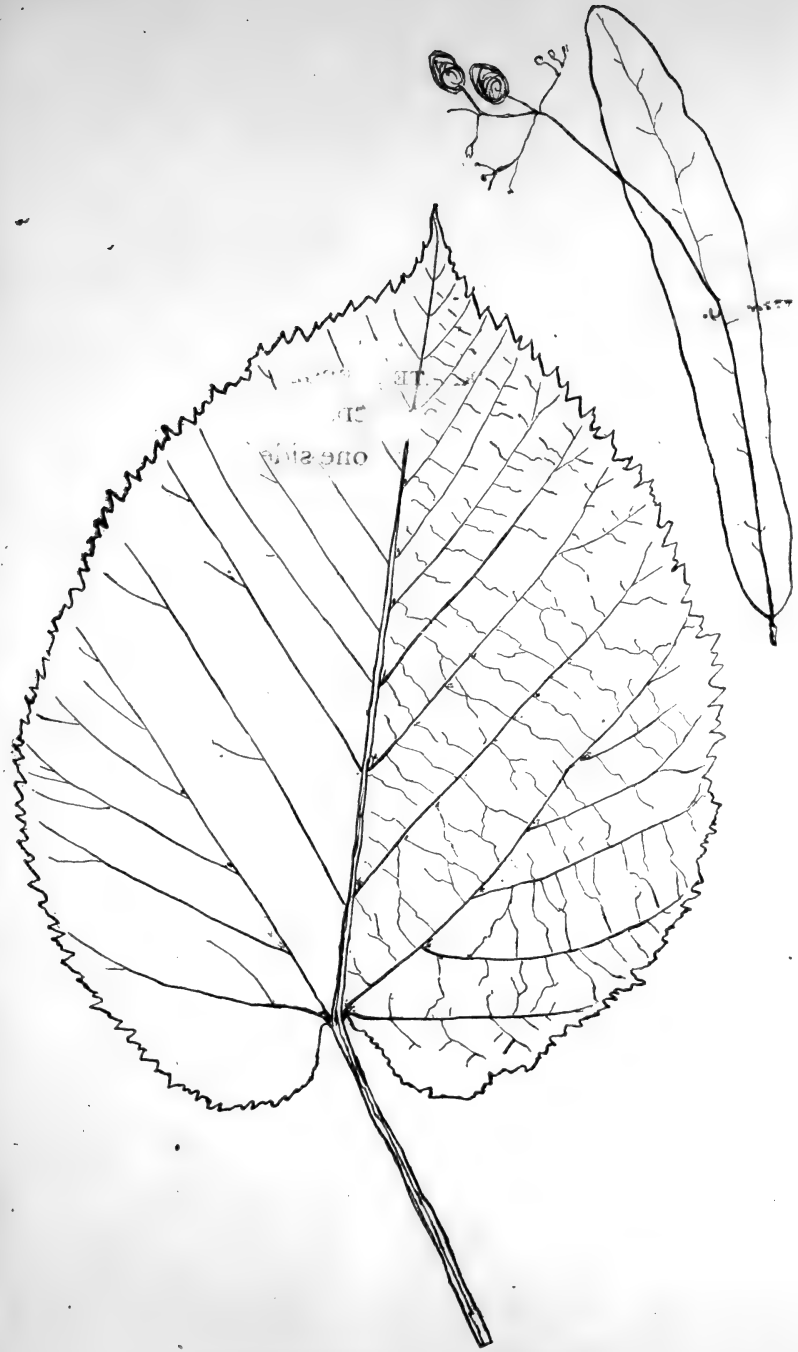


Fig. 9.—Basswood. (T. Americàna, L.)
NATURAL SIZE.

White Basswood, Wahoo. *T. heterophylla, Vent.*

This species differs from T. Americana chiefly in the following items:

Leaf, five to eight inches long; deep green and shining above, beneath velvety and silvery white with purplish ribs.

Found, from the mountains of Pennsylvania to Georgia and westward.

Height, usually twenty to thirty feet.

T. pubescens, Ait., differs chiefly from T. Americana in these particulars:

Leaves, smaller (two to three inches long), thinner, and somewhat downy beneath.

Fruit, rounded, about one fourth of an inch in diameter, and with the base of the leaf-like bract to which it is attached usually rounded at the base.

Found, New York to Florida and westward.

The cultivated *European Linden* [T. Europæa] resembles the Basswood in its foliage, but the tree is smaller (about forty feet high) and with a pyramid-shaped top.

Genus ILEX, L. (Holly.)

Fig. 10.—American Holly. *I. opàca, Ait.*

Leaves, SIMPLE; ALTERNATE; EDGE WITH RÊMOTE, VERY SHARP SPINE-LIKE TEETH, with rounded spaces between.

Outline, oval. *Apex* and *base*, pointed.

Leaf, about two inches long; dark polished green above; below rather yellowish-green; thick and stiff; smooth throughout; ribs very indistinct below.

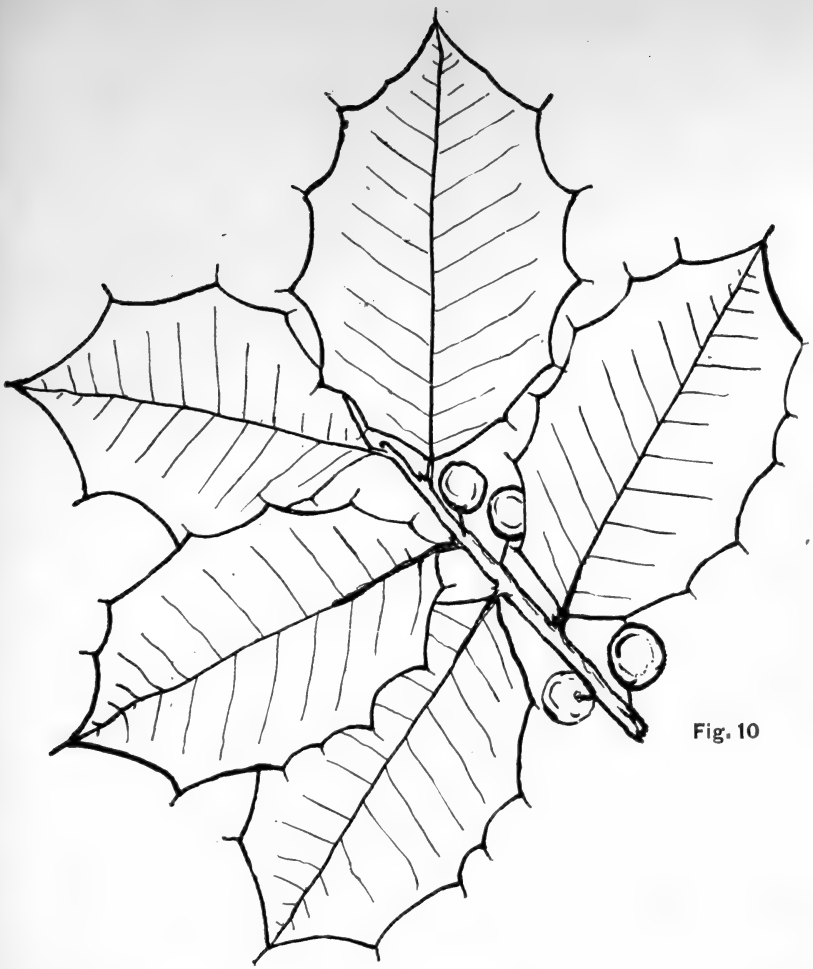


Fig. 10

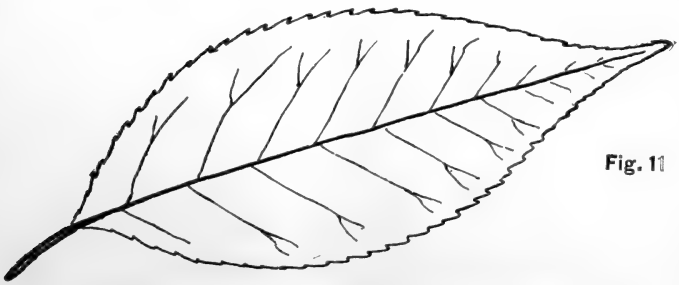


Fig. 11

Fig. 10.—American Holly. (I. opàca, Ait.)
Fig. 11.—I. montìcola.
NATURAL SIZE.

Bark, light gray and smooth.

Fruit, a nearly round, bright-red berry, the size of a pea. It ripens in September and continues upon the branches into the winter.

Found, from Massachusetts southward near the coast to Florida, and from Southern Indiana southwest, and southward to the Gulf.

An evergreen tree, ten to thirty feet high, with a compact head of spreading branches. Its wood is easily worked, white, of fine grain, and light in weight.

The use of holly and other evergreens in religious ceremonies dates from pagan times. "Trummying of the temples with floures, boughes, and garlondes, was taken of the heathen people, whiche decked their idols and houses with suche array." Early church councils made rules and restrictions concerning the practice—*e.g.*, in France Christians were forbidden "to decke up their houses with lawrell, yvie, and green boughes in the Christmas season," for "*Hedera est gratissima Baccho.*" *

Fig. 11.—*Ilex montìcola, Gray.*

This is usually regarded as a shrub, "but it not seldom attains the size and exhibits the port of a small tree"—(T. C. Porter). It differs from I. opàca chiefly in these items:

Leaves, not evergreen; egg-shape or long oval, rather thin with edge finely toothed, and apex taper-pointed.

Found, in damp woods in the Catskill and Tahonic Mountains, and in Cattaraugus County, New York; through Pennsylvania as far east as Northampton County, and southward along the Alleghanies.

* The ivy is most acceptable to Bacchus.

Genus PRUNUS L. (Cherry, Plum.)

Fig 12.—Wild Black Cherry, Rum Cherry. *P. serótina, Ehr.*

Leaves, SIMPLE; ALTERNATE; EDGE TOOTHED (with the points of the teeth so incurved as to appear blunt), and often finely "crinkled."

Outline, usually long oval or long egg-shape. *Base*, rounded or slightly pointed. *Apex*, pointed.

Leaf-stem, usually with two to five tooth-like glands near the base of the leaf.

Leaf, two to five inches long; thickish; polished, and of a deep shining green above; beneath, lighter and smooth, with the middle rib sometimes downy toward the base. In the autumn the leaves turn to orange, and later to a pale yellow.

Bark of old trunks, blackish and rough; of young trunks and on the larger branches, reddish or purplish brown; marked with scattered lines; on young shoots, at first green or olive brown, gradually becoming darker, and sprinked with small orange dots.

Flowers, white, with short stems, closely set in a long, cylinder-shaped cluster. May, June.

Fruit, about one and a quarter inches in diameter; with short stems (one and a quarter to one and a third inches) hanging in long, close clusters from the ends of the twigs. It is nearly black when ripe, and of a pleasant flavor though somewhat bitter; it is eagerly eaten by the birds. August.

Found, very widely distributed north, south, and west. It reaches its finest growth on the western slopes of the Alleghany Mountains.

A tree fifty to eighty feet high. The wood is light and hard, of a brown or reddish tinge, becoming darker with exposure, and of very great value in cabinet-work and interior finish. It is now becoming scarce, so that stained birch is often used as a substitute. The bitter aromatic bark is used as a valuable tonic; "cherry brandy" is made from the fruit.

Fig. 13. — Wild Red Cherry, Bird Cherry, Pin Cherry.
P. Pennsylvànica, L.

Leaves, SIMPLE; ALTERNATE, or alternate in pairs; EDGE FINELY AND SHARPLY TOOTHED.

Outline, narrow egg-shape. *Apex*, taper-pointed. *Base*, rounded or slightly pointed.

Leaf-stem, grooved above.

Leaf, two to six inches long, shining and smooth and of about the same shade of green on both sides.

Bark, reddish-brown and smooth, with swollen, rusty-colored dots, and usually stripping, like that of the garden cherry, around the trunk.

Flowers, white, on stems about one inch or more in length, in nearly stemless clusters. May.

Fruit, the size of a large pea, light red, on long stems (about three fourths to one inch long), sour, in clusters of two to five at the sides of the branches, and usually from the base of the leaf-stems; seldom abundant. July.

Found, Common in all northern forests. In Northern New England it quickly occupies burned-out pine regions.

A slender tree, usually twenty to twenty-five feet high, of no value as timber.

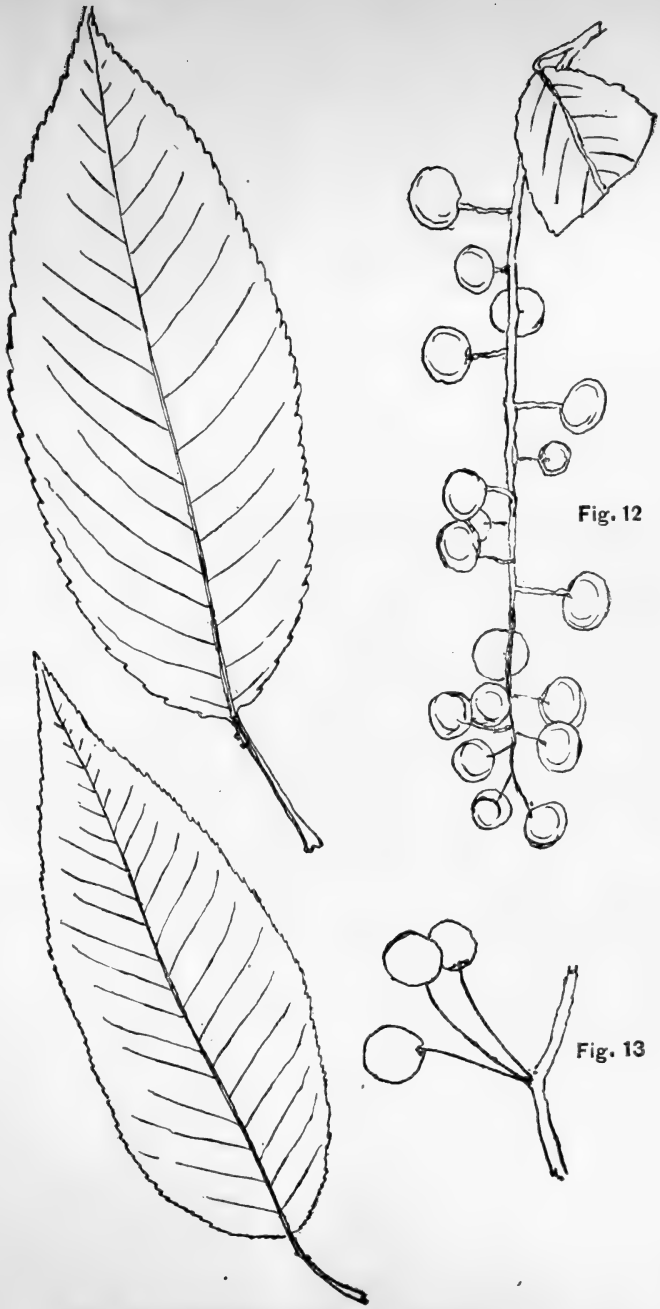


Fig. 12

Fig. 13

Fig. 12.—Wild Black Cherry. (P. serótina, Ehr.)
Fig. 13.—Wild Red Cherry. (P. Pennsylvánica. L).
NATURAL SIZE.

Fig. 14.—Wild Plum, Canada Plum, Horse Plum. *P. Americàna, Marsh.*

Leaves, SIMPLE; ALTERNATE; EDGE SHARP-TOOTHED.

Outline, long oval to reverse egg-shape. *Apex*, taper-pointed. *Base*, pointed or rounded.

Leaf-stem, one fourth to one half inch long, smooth, reddish, usually with two small wart-like glands on the raised border near the base of the leaf.

Leaf, two to three inches long; smooth when mature; "net-veined," with distinct furrows over the ribs; somewhat downy on the ribs and in their angles.

Bark of trunk very dark reddish-green or bronze-green, resembling that of a cherry-tree.

Fruit, one half to two thirds inch in diameter; broad oval; yellow, orange, or red; with a thick and acid skin and a pleasant flavor. August.

Stone, slightly flattened, and with both edges winged and sharp.

Found, from Canada southward to Florida and westward, and often in cultivation.

A small tree (sometimes a bush), eight to twenty feet high, with hard, reddish wood. In cultivation it forms an excellent stock on which to graft the domestic plums.

Fig. 14.—Wild Plum. (P. Americàna, Marsh.)
NATURAL SIZE.

Genus PYRUS L. (Apple, Mt. Ash.)

NOTE. (See others of same genus, Sec. D, *II.*)

Fig. 15.—Crab-Apple. *P. coronària, L.*

Leaves, SIMPLE; ALTERNATE; EDGE DISTINCTLY TOOTHED WHEN MATURE; sometimes nearly three-lobed.

Outline, egg-shape or oval. *Apex*, pointed. *Base*, rounded or somewhat heart-shaped.

Leaf-stem, one half to one inch long, very slender, downy.

Leaf, about two to three inches long, two thirds as wide, smooth.

Flowers, large; rose-colored and white, in loose clusters of five to ten blossoms, and very fragrant. May.

Fruit, round, one to one and a half inches in diameter; yellowish, fragrant, hard, and sour; fit only for preserving.

Found, from Ontario to Western New York, Pennsylvania, and the District of Columbia; along the Alleghany Mountains, and westward.

A small tree, ten to twenty feet high, rarely thirty feet, gaining its finest growth in the valleys of the lower Ohio. Often its presence is recognized before it is seen by means of the delightful fragrance of its blossoms.

The *Narrow-leaved Crab-Apple* (P. angustifòlia, Ait.) is sometimes, though very seldom, found as far north as Southern Pennsylvania.

Its leaves are narrower and its fruit and flowers smaller than in the northern species.

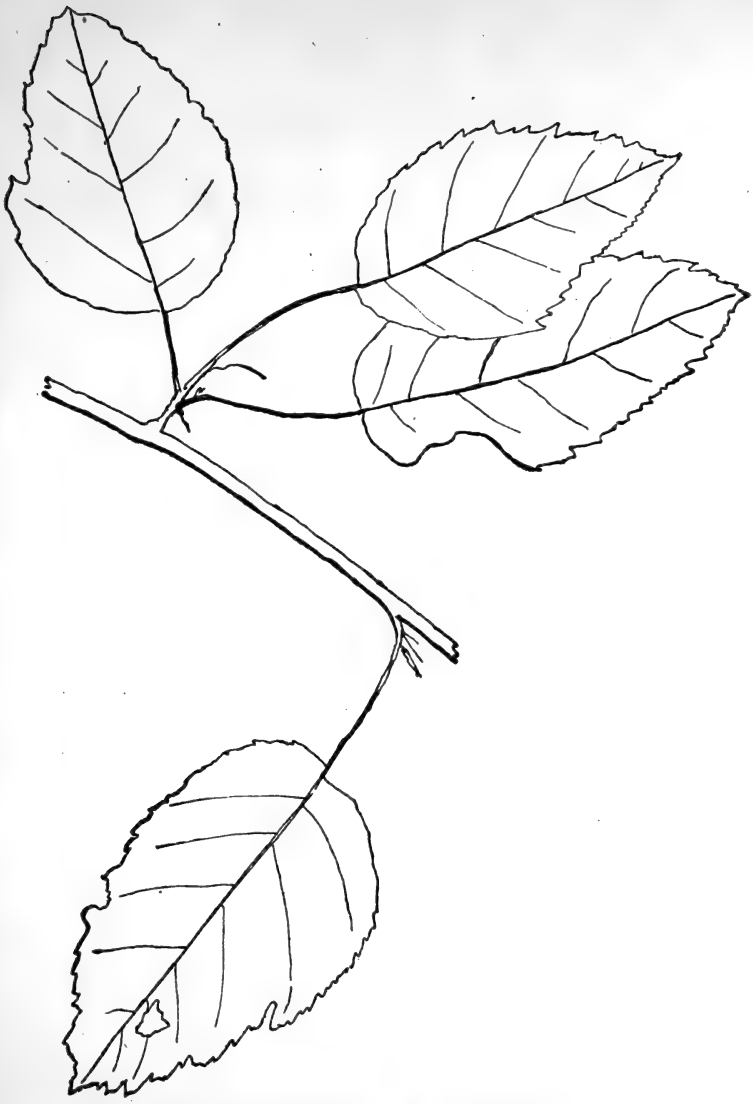


Fig. 15.—Crab-Apple. (P. coronària, L.)
NATURAL SIZE.

Genus CRATÆGUS, L. (Thorn.)

From a Greek word meaning strength.

Fig. 16.—White Thorn, Scarlet-fruited Thorn, Red Haw. *C. coccìnea, L.*

Leaves, SIMPLE; ALTERNATE (and in alternate bunches); EDGE UNEVENLY SHARP-TOOTHED (with five to nine deep cuts almost forming small lobes).

Outline, rounded egg-shape. *Apex*, pointed. *Base*, usually slightly pointed, but often blunt or slightly heart-shape.

Leaf-stem, slender and often with small wart-like glands.

Leaf, usually one and a half to two and a half inches long, but of variable size on the same tree; thin; smooth; shining.

Branchlets, greenish, or whitish and shining, as though washed with silver. *Thorns*, one to two inches long, stout, often whitish, usually slightly curved.

Flowers, about two thirds of an inch across; white (often with a rosy tinge); twelve or so in a bunch; with a strong and rather disagreeable odor. May.

Fruit, nearly one half inch in diameter; rounded or egg-shape; bright red; with thin pulp and one to five stones; somewhat edible. September.

Found, through the Atlantic forests southward to Northern Florida and Eastern Texas.

A low tree (or often a bush), ten to twenty feet high, with crooked, spreading branches; very common at the North; rare in the South.

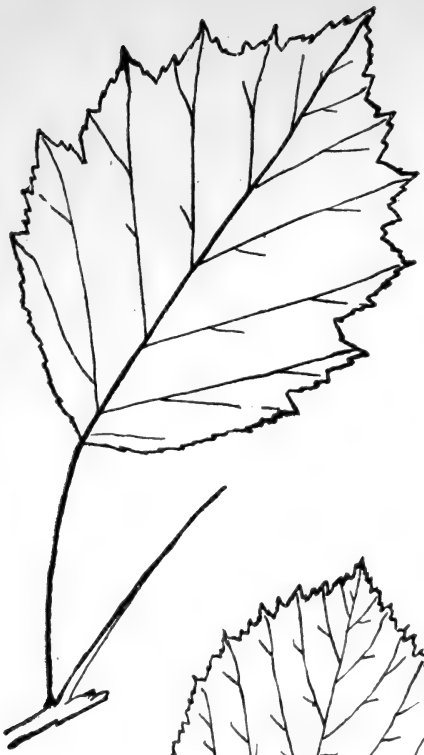
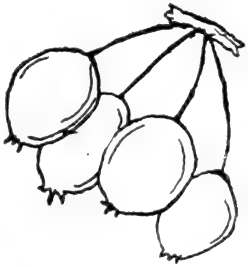


Fig. 16



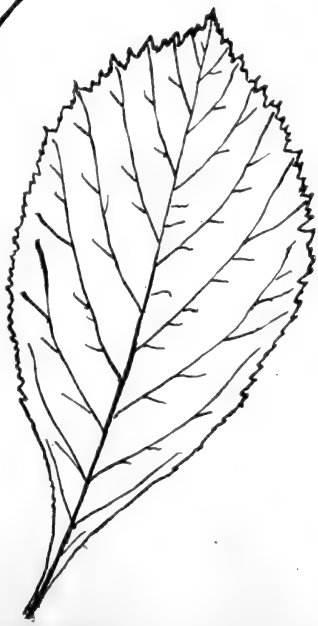


Fig. 17

Fig. 16.—White Thorn and Fruit. (C. coccinea, L.)
Fig. 17.—Black Thorn. (C. tomentosa, L.)
NATURAL SIZE.

A variety with its leaves downy, at least on the under side, and with its red fruit large and downy (*var. mollis*), is found from Central Michigan southward and westward.

Fig. 17.—Black Thorn, Pear Thorn. *C. tomentòsa, L.*

Leaves, SIMPLE; ALTERNATE; EDGE SHARPLY AND UNEQUALLY TOOTHED (sometimes with quite deep and sharp cuts, almost forming small lobes).

Outline, oval or reverse egg-shape. *Apex*, slightly pointed. *Base*, tapering in a hollow curve and along the sides of the leaf-stem to a point.

Leaf-stem, bordered by the leaf, to its base.

Leaf, about three to five inches long, one and a half to three inches wide; upper surface smoothish, and furrowed above the ribs; under surface downy, at least when young; rather thick; permanently downy on the ribs. *Thorns*, one to two inches long.

Bark of trunk, smooth and gray. New twigs, light greenish-brown.

Flowers, often one inch across; white; eight to twelve in a cluster; at the ends of the branches; fragrant. May, June.

Fruit, about one half inch in diameter; round or pear-shaped; orange-red or crimson; edible. October.

Found, through the Atlantic forests to Western Florida, and from Eastern Texas far westward. Common.

A thickly branching tree (or often a shrub) eight to twenty feet high; the most widely distributed of the American Thorns. It varies greatly in size, and in the style of its fruit and leaves.

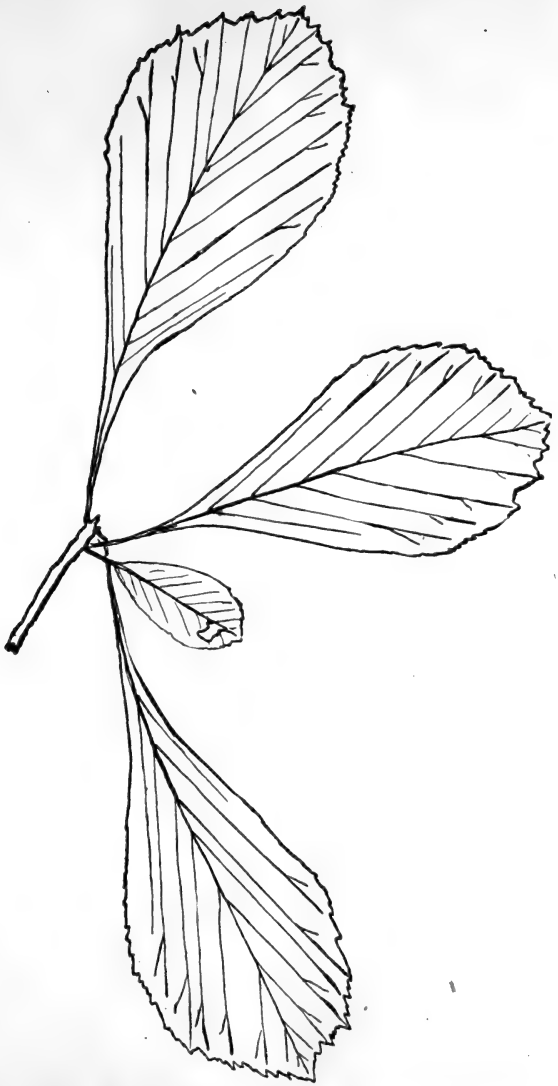


Fig. 18.—Common Thorn. (C. punctàta, Jac.)
NATURAL SIZE.

Fig. 18.—Common Thorn, Dotted-fruited Thorn. *C. punctàta, Jac.*

Leaves, SIMPLE; ALTERNATE; EDGE UNEVENLY SHARP-TOOTHED ABOVE THE MIDDLE; sometimes, toward the apex deeply cut.

Outline, reverse egg-shape. *Apex*, usually slightly pointed. *Base*, strongly wedge-shape, tapering from above the middle of the leaf and along the leaf-stem to a point.

Leaf-stem, one half to one inch long, slender, and winged by the tapering leaf.

Leaf, one and a half to two and a half inches long; about as wide; light green; rather thick; downy when young; when mature, smooth and dull, or sometimes hairy below, especially on the ribs. Ribs, very straight below; above, marked by deep furrows. *Thorns*, one to two inches long, stout and curved, or often wanting.

Bark, rough.

Flowers, white; eight to fifteen in somewhat leafy bunches. May.

Fruit, about one half inch in diameter, or more; usually dull red or yellow, with whitish dots; round; somewhat edible. September.

Found, from New Brunswick and Vermont southward and westward.

A thick, wide-spreading tree, twelve to twenty-five feet high.

Fig. 19.—Cockspur Thorn. *C. crus-galli, L.*

Leaves, SIMPLE; ALTERNATE; EDGE, SHARPLY TOOTHED ABOVE; ENTIRE BELOW.

Outline, reverse egg-shape. *Apex*, usually rounded, sometimes pointed. *Base*, tapering to a point, quite variable.

Leaf-stem, short.

Fig. 19.—Cockspur Thorn. (C. crus-galli, L.)
NATURAL SIZE.

Leaf, one to two and a half inches long, half to three quarters as wide; dark green; thick, smooth, very shining above. *Thorns*, two to three inches long, rather slender and straight.

Flowers, white; fragrant; in bunches of about fifteen blossoms, on very short side branchlets. June.

Fruit, about one third inch in diameter; pear-shaped or round; red remaining on the tree during the winter.

Found, along the St. Lawrence and westward, and from Vermont, southward and westward; not common.

A small, thick-branching tree, ten to twenty feet high. It is the best species of thorn for hedges.

Var. pyracanthifolia has a somewhat narrower leaf and longer leaf-stem.

Genus AMELÀNCHIER, Medik. (June-berry.)

Fig. 20.—Shad-bush, June-berry, Service Tree. *A. Canadensis (L.), Medik.*

Leaves, SIMPLE; ALTERNATE; EDGE VERY SHARPLY AND FINELY TOOTHED.

Outline, long oval, long egg-shape, or reverse egg-shape. *Apex*, sometimes bristle-pointed. *Base*, slightly heart-shaped or rounded.

Leaf, usually two to three inches long, somewhat downy when young, afterward very smooth above and below.

Bark of branches and twigs usually purplish-brown and very smooth.

Flowers, large, white, in long and loose clusters at the ends of the branchlets; appearing before the leaves. April, May.

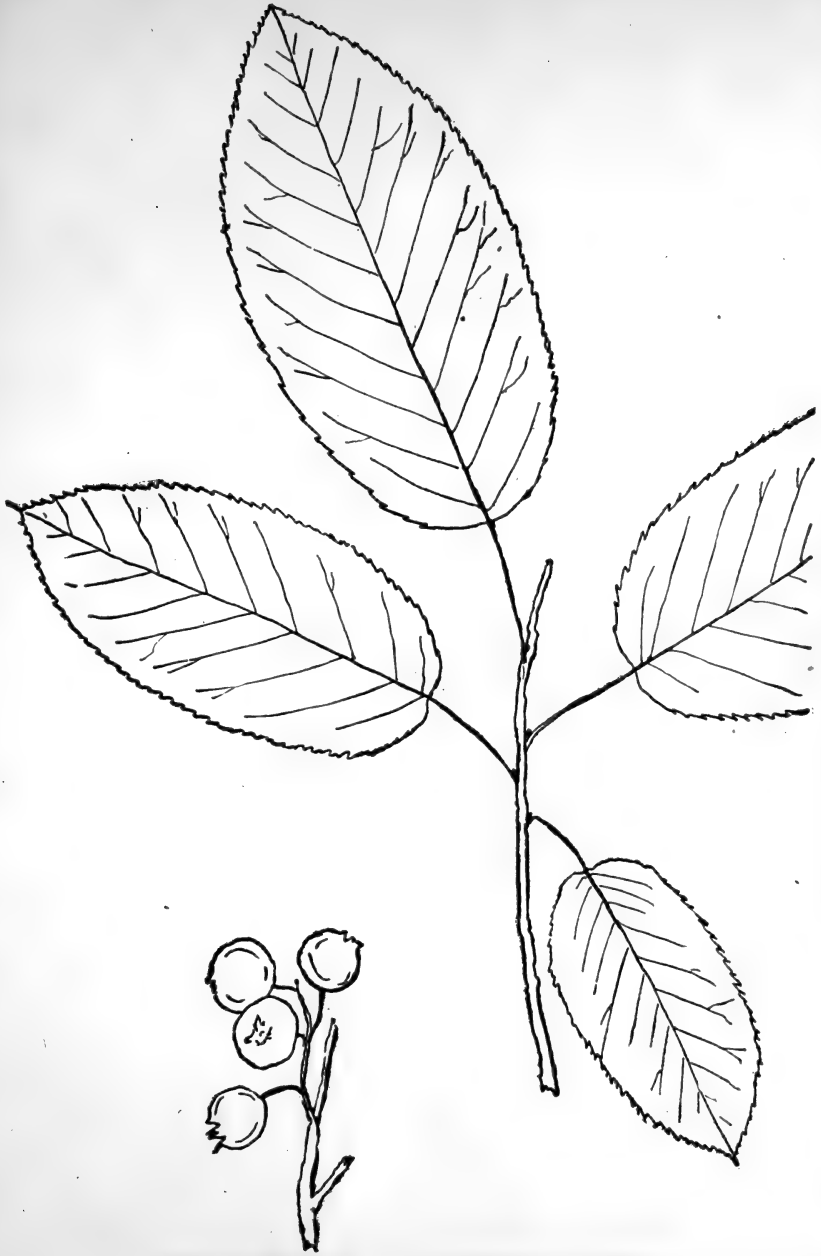


Fig. 20.—Shad-bush. A. Canadènsis (L.), Medik.
NATURAL SIZE.

Fruit, berry-like, round, purplish, sweet, and edible. June.

Found, in woods and along streams; common at the North; rare in the South.

A small tree, ten to thirty feet high, or in some of its numerous forms reduced to a low shrub; noticeable and showy in early spring because of its flowers.

The variety *A. C. oblongifòlia, T. and G.*, differs somewhat from the above in the dimensions of the flowers and flower clusters, etc.

The name "shad-bush" is given because the trees blossom about the time that the shad "run."

Genus OXYDÈNDRUM, D. C. (Sorrel Tree.)

From two Greek words meaning sour and tree.

Fig. 21.—Sorrel Tree, Sour Wood. *O. arbòreum (L.), D. C.*

Leaves, SIMPLE; ALTERNATE; EDGE TOOTHED.

Outline, oval. *Apex*, pointed. *Base*, rounded or slightly pointed.

Leaf, four to six inches long, one and a half to two and a half inches wide, soon becoming smooth, with a decided acid taste (whence the name).

Bark of trunk, rough and deeply furrowed.

Flowers, white, in loose and long one-sided clusters.

Found, from Pennsylvania and Ohio southward, chiefly along the Alleghany Mountains, and usually in dry, gravelly soil.

A tree forty to sixty feet high, with hard, close-grained wood, which is used for the handles of tools, the bearings of machinery, etc.

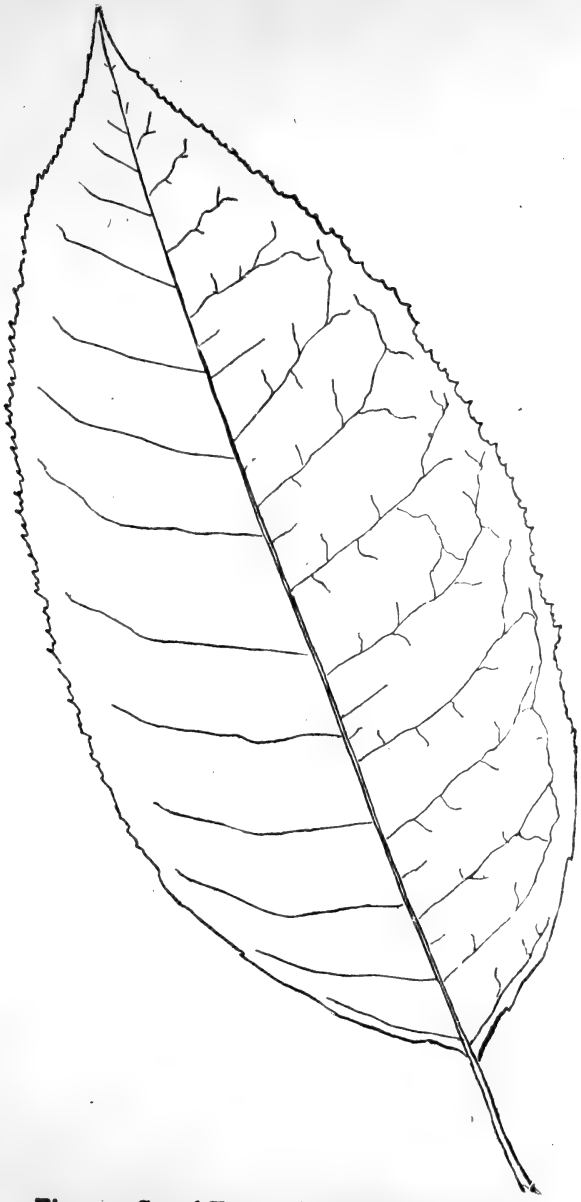


Fig. 21.—Sorrel Tree. O. arbòreum (L.), D. C.
NATURAL SIZE.

Genus ULMUS, L. (Elm.)

Fig. 22.—White Elm. *U. Americàna, L.*

Leaves, SIMPLE; ALTERNATE; EDGE SHARPLY AND OFTEN DOUBLY TOOTHED.

Outline, oval or egg-shaped, or inversely egg-shaped; always one-sided.

Base, rounded, or slightly heart-shaped, rarely pointed. *Apex*, taper-pointed.

Leaf-stem, about one quarter inch long. *Buds*, smooth.

Leaf, usually two to five inches long, and one and a half to two and a half wide; somewhat downy when young, afterward roughish below; above, either rough in one direction, or (especially if taken from the ends of the long branches) smooth and shining. The *ribs* prominent and straight.

Bark of the branches not marked with "corky ridges"; branchlets, smooth.

Seeds, flat *egg-shaped* or *oval*, winged and *fringed* all around. Last of May.

Found, northward to Southern Newfoundland; southward to Florida; westward to the Black Hills of Dakota. Toward the western and southwestern limits it is found only in the river-bottom lands.

One of the very noblest of American trees, eighty feet or more in height, and of strong and graceful proportions. The trunk divides at a slight angle into two or three arching limbs, and these again into many smaller curving and drooping branches. The trunk and the larger branches are often heavily fringed with short and leafy boughs.

The tree is widely cultivated. Streets planted with it become columned and arched like the aisles of a Gothic cathedral.

The wood is hard, and very tough from the interlacing of its fibres. It is used in making saddle-trees and for

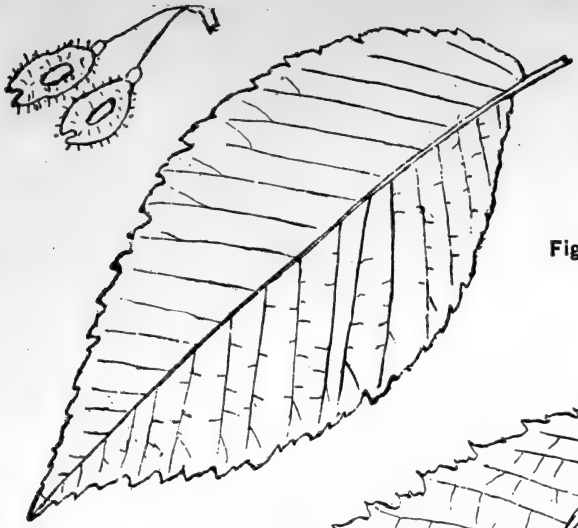


Fig. 22

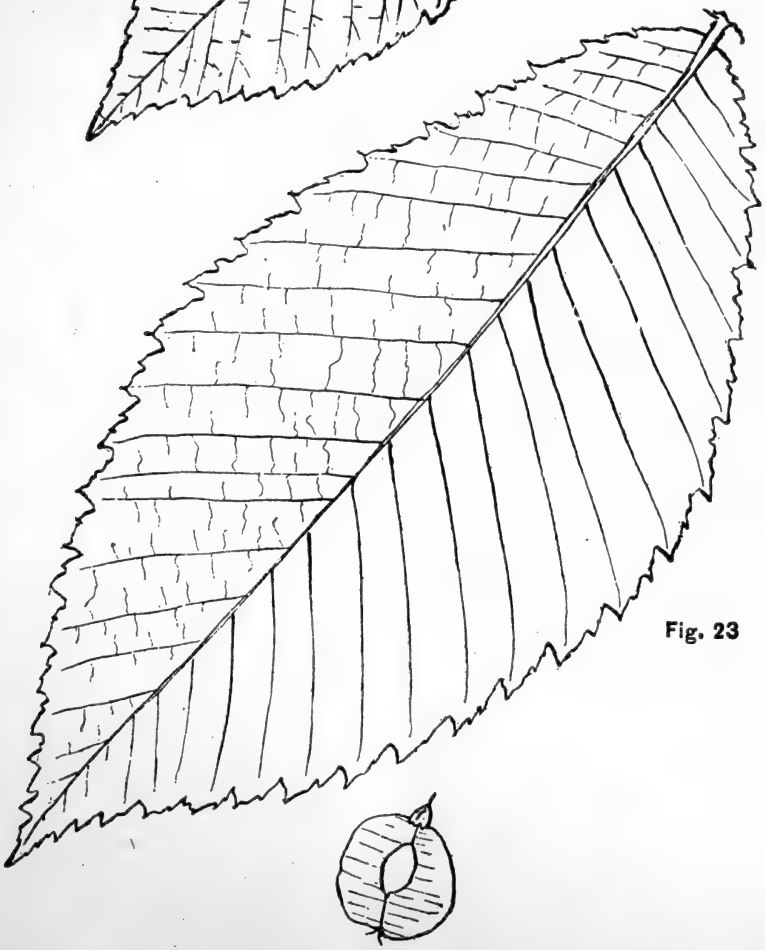


Fig. 23

Fig. 22.—White Elm. (U. Americàna, L.)
Fig. 23.—Slippery Elm. (U. fulva, Michaux.)
NATURAL SIZE.

wheel-hubs, and is now largely exported to England to be used in boat- and ship-building.

One day I found four men in a stone quarry, working with iron bars and rollers over a heavy flat slab. They were moving the stone slowly up a narrow plank into their cart. "John," I said, "I would not think that board could hold a stone of such weight two minutes. Is it hickory?" "No sir," said John, "that 's an elm plank; it can't break." It did not break.

It was one of the woods which the Deacon used in building his famous "one-hoss shay":

> "So the deacon inquired of the village folk
> Where he could find the strongest oak,
> That could n't be split nor bent nor broke,—
> That was for spokes and floor and sills;
> He sent for lancewood to make the thills;
> The cross-bars were ash, from the straightest trees;
> The panels of whitewood, that cuts like cheese,
> But lasts like iron for things like these;
> *The hubs of logs from the 'Settler's Ellum,'—*
> *Last of its timber,—they could n't sell 'em,*
> *Never an axe had seen their chips,*
> *And the wedges flew from between their lips,*
> *Their blunt ends frizzled like celery-tips;*"
>
> —Oliver Wendell Holmes.

Corky White Elm. *U. racemòsa, Thomas.*

In foliage and shape and in the qualities of its timber this tree very closely resembles the white elm. A very noticeable difference is in its branches, which are often marked lengthwise with many large, corky, almost winged ridges. Its seeds resemble but are rather larger than those of the white elm.

Found, from Southwestern Vermont through Western New York and Southern Michigan to Northeastern Iowa, and southward through Ohio to Central Kentucky. Its finest growth is in Southern Michigan.

Fig. 23.—Slippery Elm, Red Elm. *U. fulva, Michaux, U. rubra, Michaux, f.*

Leaves, SIMPLE; ALTERNATE; EDGE SHARPLY AND DOUBLY TOOTHED.

Outline, oval or long egg-shape. *Apex*, taper-pointed. *Base*, slightly heart-shaped or rounded.

Leaf-stem, about one eighth inch long, stout and rough. Buds *hairy*.

Leaf, four to seven inches long, three to four inches wide. The upper surface is *rough both ways*, and *very* rough downwards, almost like a fine file. The under surface is slightly rough.

The *ribs* beneath are prominent and straight, and hairy in their angles.

Bark of the larger branches, brownish; branchlets, light-gray and very *rough*, becoming grayish-purple. The inner bark is very *gummy and "slippery."*

Seeds, flat, *round*, winged, but *not fringed*. Last of May.

Found, along the lower St. Lawrence to Ontario, and from Western New England westward and southward; in woods and along streams.

A tree thirty to forty feet high. Its wood is hard and strong, but splits easily when dry. Though otherwise inferior, for posts it is superior to white elm. Its inner bark is sold by druggists as "slippery elm," and is nutritious and medicinal. Its name of red elm is due to the reddish-brown tinge of its large rounded and hairy buds in the spring.

The *English Elm* [U. campèstris, L.] was introduced early, and is often found in cultivation. It differs from the white elm, especially in these items:

Leaves, usually smaller, and more closely placed upon the branch.

Bark, darker and much more broken.

Branches, compact and more or less horizontal and straight to their ends, instead of arching and drooping.

Seeds, resembling in shape those of the slippery elm.

The tree is sometimes seen sixty to seventy feet high, but usually is much smaller. Like all the elms it is of rapid growth.

Genus CELTIS, L. (Hackberry.)

An ancient name for the Lotus.

Fig. 24.—Hackberry, Sugar Berry. *C. occidentàlis, L.*

Leaves, SIMPLE; ALTERNATE; EDGE SHARP-TOOTHED, but entire at the base.

Outline, obliquely egg-shaped, very one-sided. *Apex*, taper-pointed. *Base*, usually somewhat heart-shaped, or slightly pointed or rounded.

Leaf, two to three inches long, one to two inches wide; rough.

Bark of the trunk, rough; sometimes much crumpled.

Fruit, about the size of a pea; solitary; drooping from the bases of the leaf-stems, on stems once or twice as long as the leaf-stems; rounded; pulp thin, sweet, and edible; purplish red; ripe in September.

Found, from the valley of the St. Lawrence westward and southward.

A tree fifteen to thirty feet high (but much larger at the South), most common, and reaching its finest growth in the basin of the Mississippi. It is very variable in size and in the shape and texture of its leaves.

Variety *crassifòlia* is sometimes found, in which the leaves are thicker and usually toothed all around.

Fig. 24.—Hackberry. (C. occidentàlis, L.)
NATURAL SIZE.

Genus MORUS, L. (Mulberry.)

Fig. 25.—Red Mulberry. *M. rubra, L.*

Leaves, SIMPLE; ALTERNATE; EDGE COARSELY AND SOMEWHAT IRREGULARLY TOOTHED; or, at times, unequally and very variously TWO- TO THREE-LOBED.

Outline, egg-shape. *Apex*, long pointed (when there are side lobes their ends may be rounded). *Base*, heart-shaped, and more or less one-sided.

Leaf, three to seven inches long, rather thin, rough above and downy below, sometimes becoming very smooth. The ribs are very distinct, and whitish below.

Bark, grayish, and much broken.

Berries, about the size and shape of small blackberries. When ripe they are very dark purple (nearly black), juicy, and sweet. July.

Found, from Western New England, westward and southward.

A tree fifteen to twenty-five feet high; in the Middle and Western States much larger. It is most common and reaches its finest growth along the lower Ohio and the Mississippi rivers. Its wood is valuable, light, and soft, but very durable in contact with the ground.

The *White Mulberry* [M. alba] is sometimes found around old houses and in fields. It was introduced from China, and was formerly cultivated as food for silk-worms. Its leaves resemble those of the Red Mulberry in shape, but are smooth and shining.

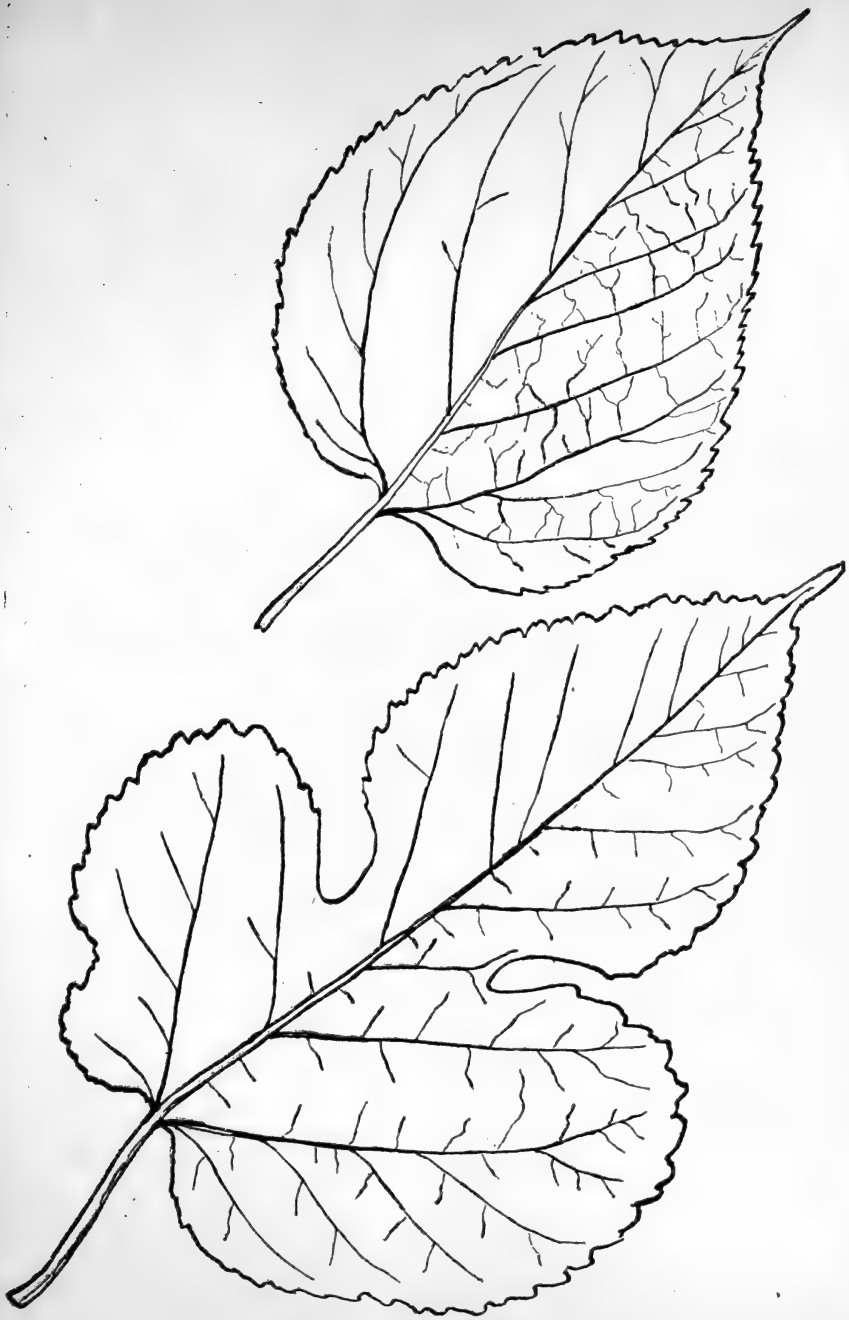


Fig. 25.—Red Mulberry. (M. rubra, L.)

NATURAL SIZE.

Genus BROUSSONÈTIA, L'Her.

Paper Mulberry. [*B. papyrìfera, Vent.*]

Leaves, SIMPLE; ALTERNATE; EDGE IRREGULARLY SHARP-TOOTHED, or, at times, unequally and very variously two- to three-lobed.

Outline, very nearly that of the Red Mulberry (Fig. 25) broad egg-shape. *Apex*, taper-pointed (when there are side lobes their ends also pointed). *Base*, rounded or slightly pointed, rarely, in the small leaves, slightly heart-shaped.

Leaf-stem, rough.

Leaf, usually about five inches long, sometimes nine inches; thick; rough above, *very velvety-rough*. The main ribs are very distinct, and are thickly netted with smaller ones.

Bark, light and smoothish.

Flowers, in long aments and balls.

Fruit, not edible.

An introduced tree, common around houses or escaped from cultivation.

A low-branching, large-headed shade tree of medium size, introduced from Japan.

In Japan and China the bark of the Paper Mulberry is made into paper, whence the name.

Genus PLÀTANUS, L. (Buttonwood.)

From a Greek word meaning broad, in reference to the breadth of its shade or of its leaf.

Fig. 26. — Buttonwood, Buttonball Tree, Plane Tree, Sycamore.* *P. occidentàlis, L.*

Leaves, SIMPLE; ALTERNATE; EDGE VARIABLE, EITHER COARSE-TOOTHED OR SOMEWHAT LOBED; with the teeth or lobes sharp, and the hollows between them rounded.

Outline, rounded. *Apex*, pointed. *Base*, more or less heart-shaped, squared, or rounded.

Leaf-stem, downy when young, smoothish when old; and covering the leaf-bud with its swollen base.

Leaf, three and a half to eight inches wide, and usually broader than long; downy beneath when young, becoming smooth.

Bark, the thin outer bark peels off each year in hard and brittle strips, leaving the branches and parts of the trunk with a mottled, whitish, polished-looking surface.

Flowers, small, in compact, round balls (about one inch in diameter) like round buttons, which dry and harden, and cling to the branches by their slender stems (three to four inches long), and swing like little bells during a good part of the winter.

Found, from Southern Maine, southward and westward, in rich, moist soil, oftenest along streams. Its finest growth is in the bottom lands of the Mississippi and Ohio rivers.

* The name "sycamore," though a common one, should be dropped. It belongs to another and very different tree.

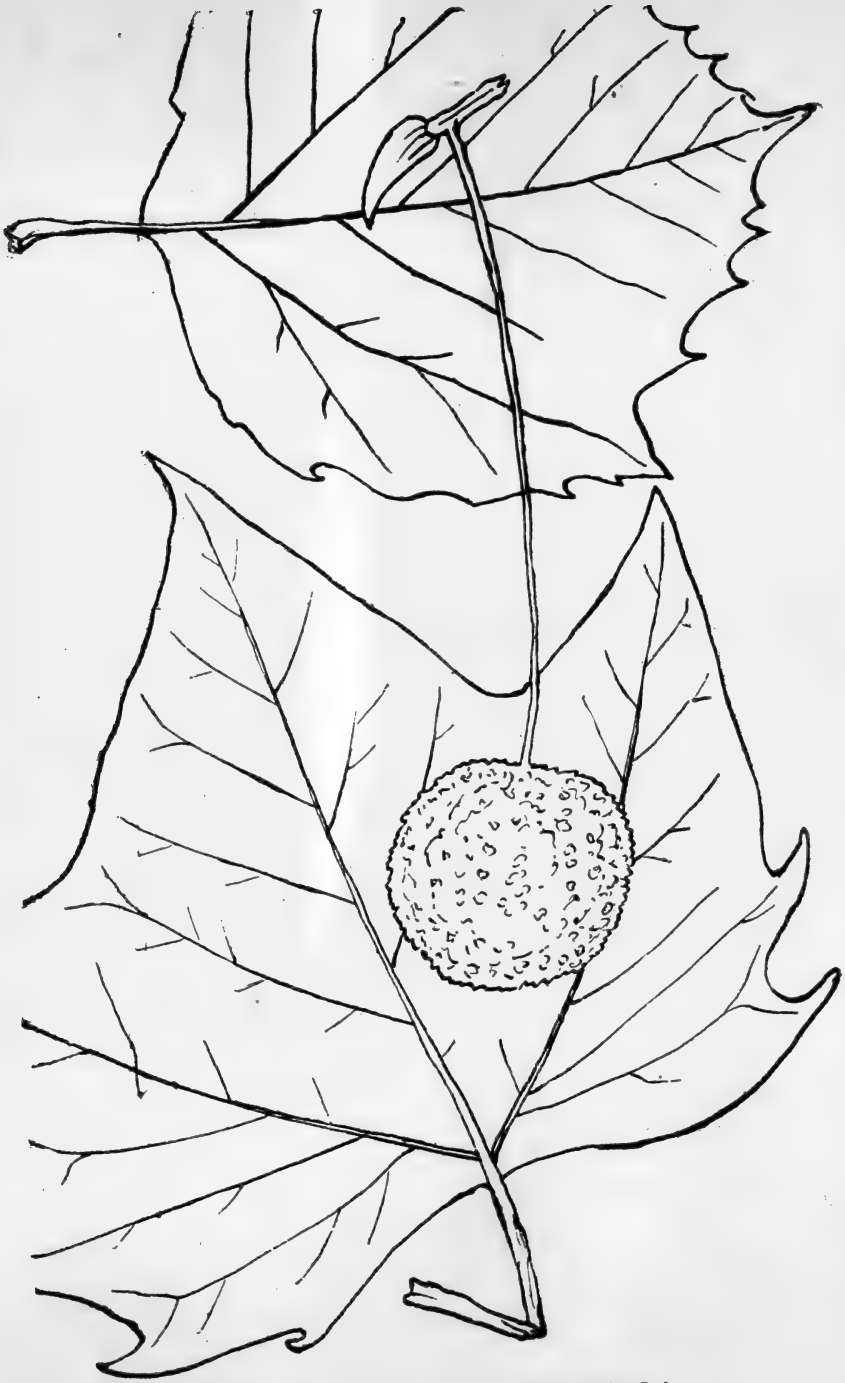


Fig. 26.—Buttonwood. (P. occidentàlis, L.)
NATURAL SIZE.

The largest of the trees of the Atlantic forests, commonly sixty to eighty feet high; along the western rivers often eighty to one hundred and thirty feet high, sometimes more, with a circumference of forty to fifty feet.

A tree in Eaton, N. J., is one of the largest in the State. It is eighty-five feet high. At a point eight feet from the ground its circumference is fourteen feet three inches. The largest trunks are usually hollow. The wood is hard and compact, difficult to split and work, of a reddish-brown color within. Its principle use is in the making of tobacco boxes.

There is a fine and somewhat noted group of these trees on the grounds of James Knox, in Knoxboro, N. Y. In old times they formed a favorite camping place for the Indians in their trading expeditions. They all measure not far from three feet in diameter.

Genus BÈTULA, L. (Birch.)

Fig. 27.—White Birch, Old-field Birch, Gray Birch. *B. populifòlia, Marsh.*

Leaves, SIMPLE; ALTERNATE (often alternate in pairs); EDGE UNEQUALLY SHARP-TOOTHED, with the base entire.

Outline, triangular. *Apex*, taper-pointed. *Base*, variable, more or less squared, sometimes slightly hollowed, rounded, or pointed.

Leaf-stem, long and slender, about three quarters of an inch or more in length.

Leaf, one and three quarters to three inches long. Smooth and shining on both sides.

The *outer bark* of the mature trunk is chalky-white and thin, but not, like the bark of the Paper-birch, easily separable into layers. Usually it is marked with blackish dots and lines. Often the branchlets and twigs are blackish, and in very young trees the bark may be light reddish-brown, and marked with white dots.

Found, on poor soil, from Delaware and Pennsylvania northward (mostly toward the coast), and in ornamental cultivation. It springs up abundantly over burned and abandoned lands.

A slender, short-lived tree, twenty to thirty feet high, with white, soft wood, not durable; used largely in making spools, shoe-pegs, etc., and for fuel.

A still more graceful cultivated species is the European *Weeping Birch* [B. pèndula]. Its branches are very drooping, with more slender leaves, and a spray that is exceedingly light and delicate, especially in early spring.

Fig. 28.—Paper Birch, Canoe Birch, White Birch. *B. papyrìfera, Marsh.*

Leaves, SIMPLE; ALTERNATE; EDGE SHARPLY AND UNEQUALLY DOUBLE-TOOTHED.

Outline, egg-shaped. *Apex*, pointed. *Base*, rounded, slightly heart-shaped, or, rarely, wedge-shaped.

Leaf-stem, downy.

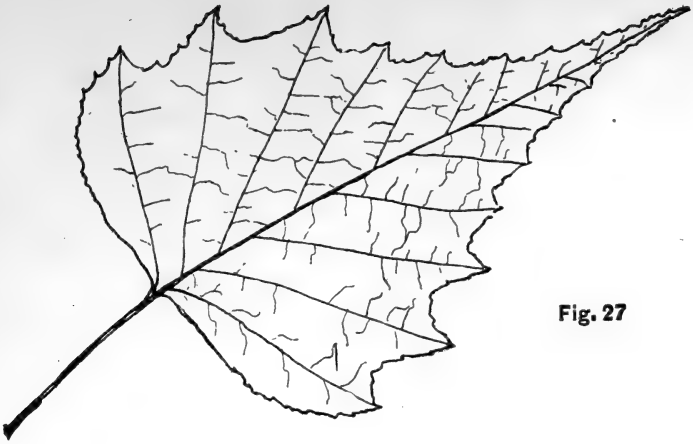


Fig. 27

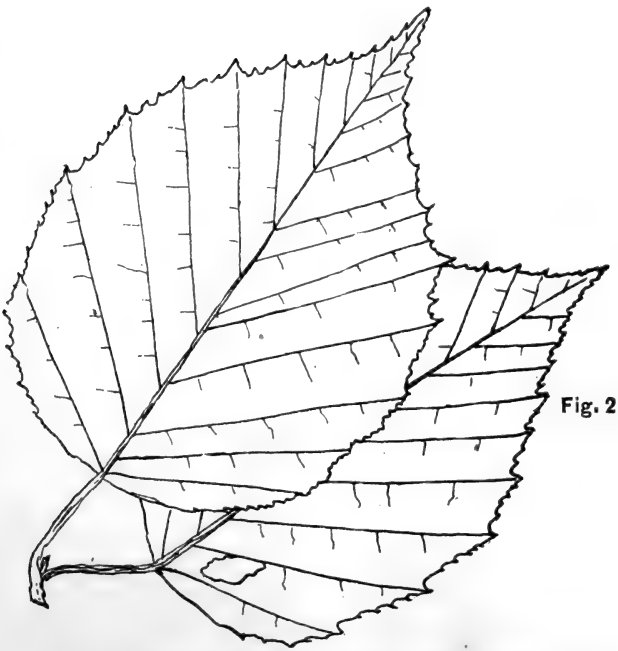


Fig. 28

Fig. 27.—White Birch. (B. populifòlia, Marsh.)
Fig. 28.—Paper Birch. (B. papyrìfera, Marsh.)
NATURAL SIZE.

Leaf, two to three inches long; dark green and smooth above; beneath, *dull*, and with the *ribs somewhat hairy*, especially in their angles.

Bark of trunk very tough and durable; thick; snow-white on the outside; *easily removed* from the wood, and then itself *very separable* into paper-like sheets. The inner sheets are of a reddish tinge.

Found, in the mountains of Northern Pennsylvania, New England, and far northward, farther than any other non-evergreen tree of America, excepting the aspen.

A tree, forty to seventy feet high. The wood is light, hard, and very close-grained, but decays rapidly when exposed—more rapidly than the bark, which often remains as a shell long after the wood within has disappeared. It is very largely used in making spools, pegs, shoe-lasts, in turnery, for wood-pulp, and for fuel. The waterproof bark is much used by Indians and trappers for their canoes.

"Give me of your bark, O Birch-Tree!
Of your yellow bark, O Birch-Tree!
Growing by the rushing river,
Tall and stately in the valley!
I a light canoe will build me,
That shall float upon the river,
Like a yellow leaf in autumn,
Like a yellow water-lily.
'Lay aside your cloak, O Birch-Tree!
Lay aside your white-skin wrapper,
For the summer time is coming,
And the sun is warm in heaven,
And you need no white-skin wrapper!'"

Hiawatha.

Fig. 29.—Red Birch, River Birch. *B. nigra, L.; B. rubra, Michaux, f.*

Leaves, SIMPLE; ALTERNATE; EDGE UNEQUALLY DOUBLE-TOOTHED; entire at base.

Outline, egg-shape, often approaching diamond-shape. *Apex*, pointed. *Base*, somewhat pointed, often rather blunt wedge-shaped.

Leaf-stem, short (about one half to three fourths of an inch) and downy.

Leaf, about three inches long by two inches wide, or often less; whitish and (until old) downy beneath; dotted; in autumn turning to a bright yellow.

Bark of the trunk reddish-brown. As the tree grows the bark becomes torn and loose, hanging in thin shreds of varying shades. The young twigs are downy.

Found, on low grounds, especially along river banks, from Massachusetts westward and southward. It becomes common only in the lower part of New Jersey. Its finest growth is in the South. It is the only birch which grows in a warm climate.

A tree usually thirty to fifty feet high, with the branches long and slender, arched and heavily drooping. Often the branches cover the trunk nearly to the ground. "Birch brooms" are made from the twigs.

Fig. 30.—Yellow Birch. *B. lùtea, Michaux, f.*

Leaves, SIMPLE; ALTERNATE (often alternate in pairs); EDGE VERY SHARPLY, UNEQUALLY, AND RATHER COARSELY TOOTHED.

Outline, egg-shape. *Apex*, pointed. *Base*, narrowed and *heart*-shaped.

Leaf-stem, short and downy.

Leaf, about four by two and one fourth inches, or often smaller; thin; downy when young, becoming smooth.

Ribs, straight.

Outer bark of trunk thin and a *silvery yellow*, and separating into narrow ribbons curling outwards at the ends. The twigs and the bark are sweet-tasting and aromatic, but less so than in the "Sweet Birch."

Found, in moist woods, along the Alleghany Mountains, in Delaware and Southern Minnesota, and northward into Canada.

A tree forty to eighty feet or often more in height; one of the largest and most valuable non-evergreen trees of New England and Canada. Its hard, close-grained wood is largely used for fuel, in making furniture, button-moulds, wheel-hubs, pill-boxes, etc.

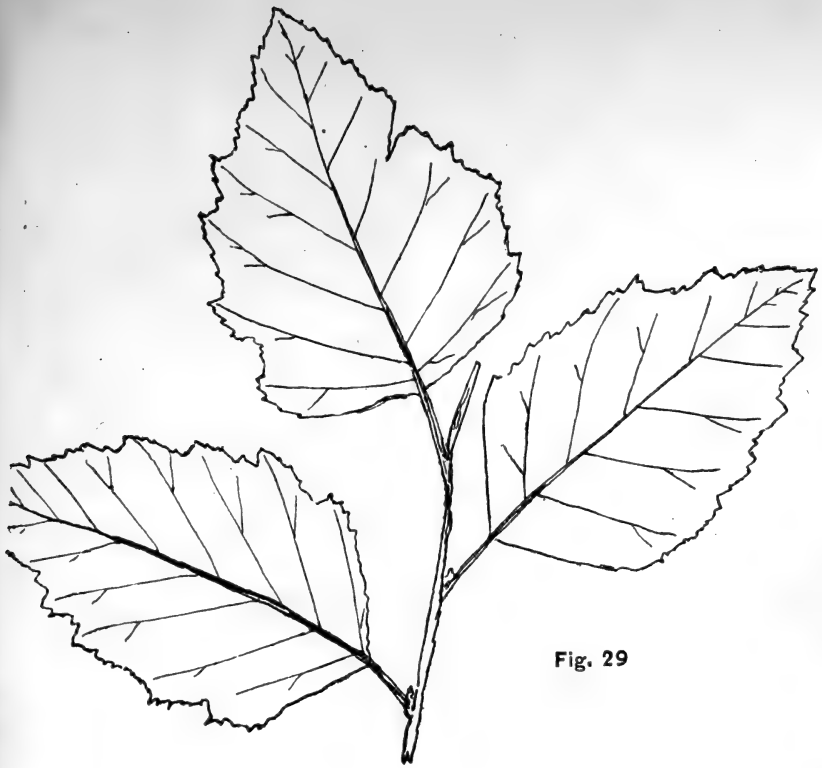


Fig. 29

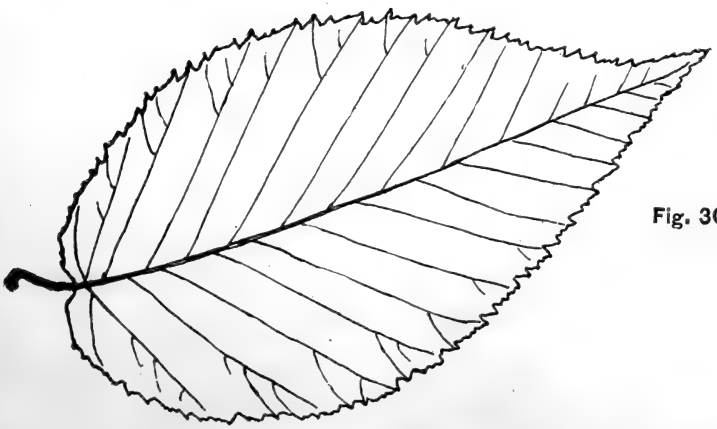


Fig. 30

Fig. 29.—Red Birch. (B. nigra, L.)
Fig. 30.—Yellow Birch. (B. lùtea, Michaux, f.)
NATURAL SIZE.

Fig. 31.—Sweet Birch, Cherry Birch, Black Birch. *B. lenta, L.*

Leaves, SIMPLE; ALTERNATE; EDGE FINELY AND SHARPLY DOUBLE-TOOTHED.

Outline, egg-shape. *Apex*, pointed. *Base*, heart-shaped.

Leaf-stem, short and downy.

Leaf, two to four inches long; about one half as wide; silky-hairy when young, but becoming smooth, except on the ribs beneath.

Bark of trunk, a *dark chestnut-brown;* smoothish when young, but becoming rough in old trees. The smaller branches are smooth and dotted with white spots. In its leaves and the color of the twigs it somewhat resembles the garden cherry. The foliage and bark are very aromatic and sweet-tasting.

Found, from Newfoundland to Northern Delaware, westward, and southward along the mountains. It is very common in the northern forests.

A tree thirty to sixty feet high, with many slender branches. The wood is hard, fine-grained, and of a reddish tint. It is largely used for cabinet-work (sometimes in place of the more valuable Black Cherry) and for fuel.

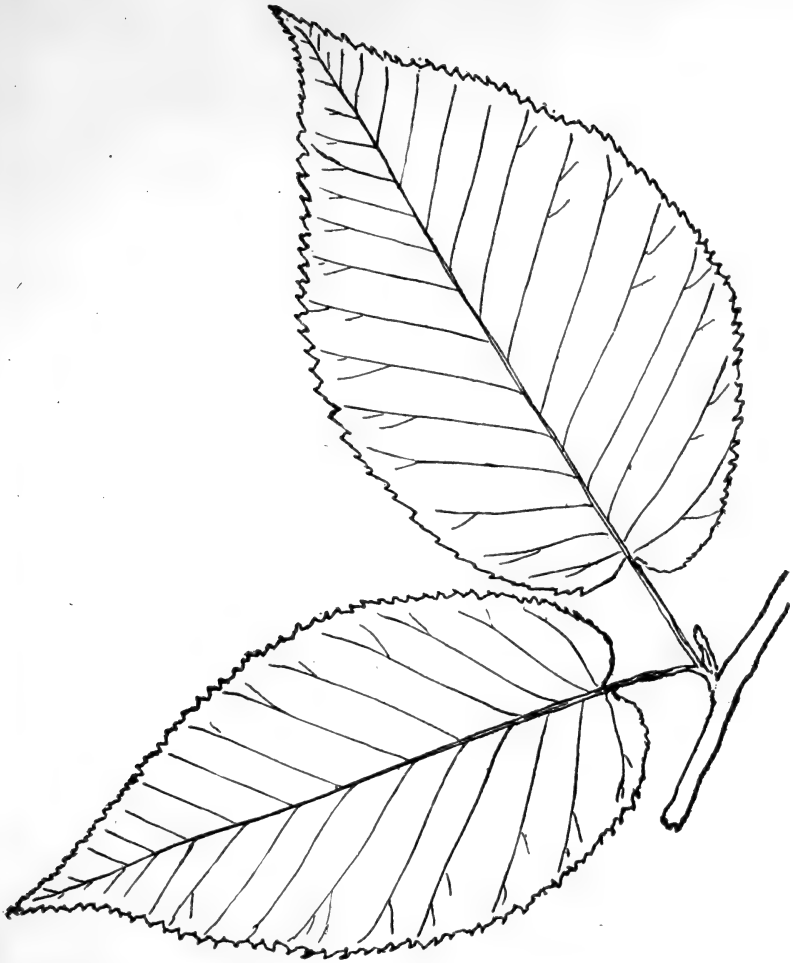


Fig. 31.—Sweet Birch. (B. lenta, L.)
NATURAL SIZE.

Genus ÒSTRYA, Scop. (Hop-Hornbeam.)

Fig. 32, *a* and *b.* — **Hop-Hornbeam, Ironwood, Leverwood.**
O. Virginiàna (Mill), Willd.

Leaves, SIMPLE; ALTERNATE; EDGE VERY SHARPLY AND SLIGHTLY IRREGULARLY AND UNEQUALLY TOOTHED.

Outline, long oval or long egg-shape. *Apex,* taper-pointed. *Base,* slightly heart-shaped.

Leaf-stem, about *one fourth inch* long, and often *rough.*

Leaf, usually three to four inches long, and about half as wide, but with many smaller leaves of varying size on the same branch; smoothish above, paler and somewhat downy below. The straight *ribs* and their angles hairy.

Bark of trunk, brownish or dark gray, and remarkable for being *finely furrowed* up and down, with the ridges broken into three- to four-inch lengths. These divisions are narrower than on any other rough-barked tree, and they become narrower and finer as the tree grows older. The new shoots are reddish green and dotted with brown; the younger branches purplish-brown and dotted with white or gray. When the branch is two to three inches thick, its bark becomes grayish and begins to crack.

Fruit, in long *oval, drooping clusters,* resembling those of the hop-vine, with *long, unlobed scales* that lap each other like shingles. August, September.

Found, oftenest on dry hill-sides. Common North, South, and West, especially in Southern Arkansas.

A tree twenty to thirty feet high, with white, very strong, and compact wood. It would be very valuable, if it were more abundant and of larger growth.

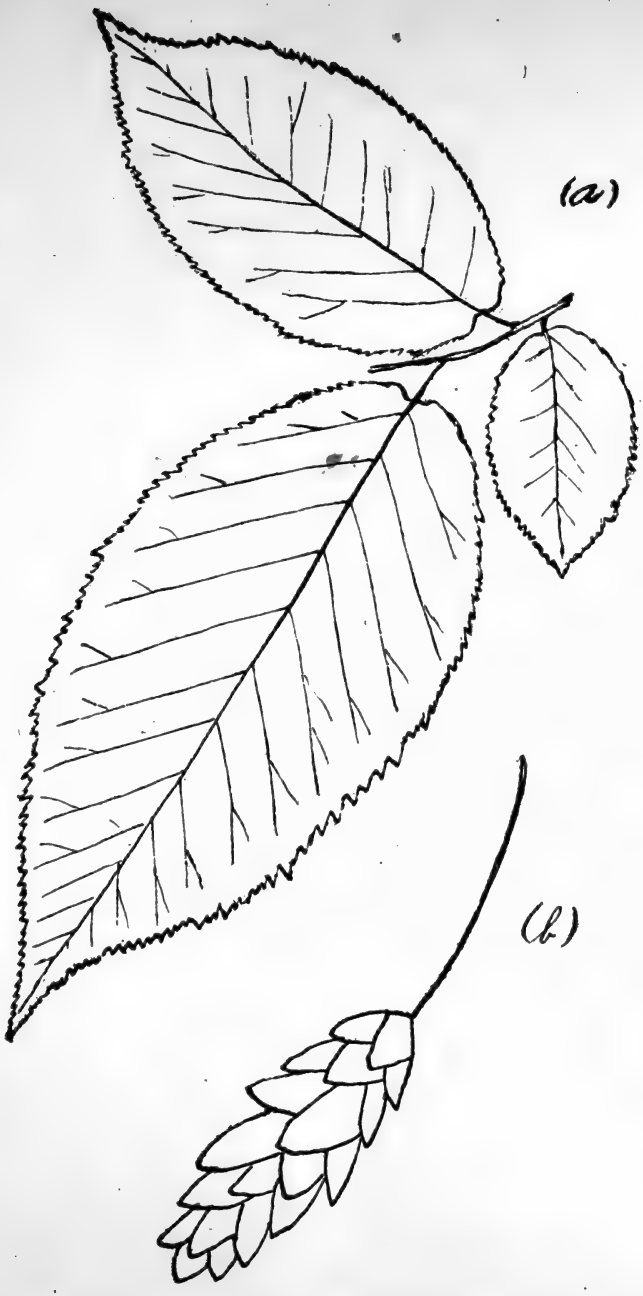


Fig. 32.—Hop-Hornbeam. O. Virginiàna (Mill), Willd.

a. Leaves. *b*. Fruit.

NATURAL SIZE.

Genus CARPINUS, L. (Hornbeam.)

Fig. 33, *a* and *b*.—**Hornbeam, Ironwood, Water Beech, Blue Beech.** *C. Caroliniàna, Walt.*

Leaves, SIMPLE; ALTERNATE; EDGE VERY SHARPLY AND QUITE IRREGULARLY AND UNEVENLY TOOTHED.

Outline, long egg-shape, or reverse long egg-shape. *Apex*, taper-pointed. *Base*, rounded or slightly heart-shaped.

Leaf-stem, about one half inch long, slender and smooth, or slightly hairy.

Leaf, usually three to four inches long, and about half as wide, but with many smaller leaves of varying size on the same branch; nearly smooth, slightly hairy on the straight and distinct ribs and in their angles.

Bark of trunk, a deep bluish-gray or slate; smooth, but often marked up and down with irregular ridges, which run from each side of the lower branches. The new shoots are somewhat hairy, and brownish or purplish; the older branchlets, an ashy-gray color, with a pearly lustre.

Fruit, in loose drooping cluster, with leaf-like scales that are strongly three-lobed and placed in pairs base to base. October.

Found, along streams and in swamps. Quite common North, South, and West; northward often only as a low shrub.

A small tree or shrub, usually ten to twenty feet high, but in the southern Alleghany Mountains sometimes reaching a height of fifty feet. Its wood is white and very compact and strong.

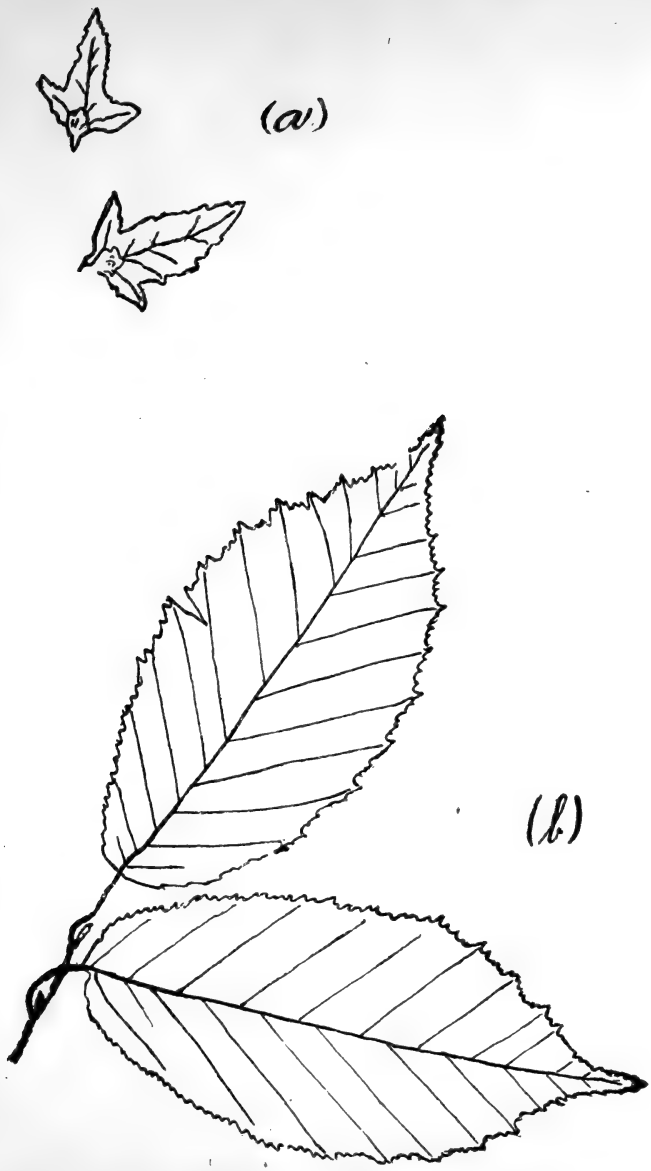


Fig. 33.—Hornbeam. (C. Caroliniàna, Walt.)

a. Fruit scales. *b*. Leaves.

NATURAL SIZE.

Genus CASTÀNEA, L. (Chestnut.)

From the name of a town in Thessaly.

Fig. 34.—Chestnut. *C. satìva (L.), var. Americàna (Michaux), Sarg.*

Leaves, SIMPLE; ALTERNATE; EDGE SHARP-TOOTHED with the teeth bristle-pointed and the hollows between rounded.

Outline, very narrow oval. *Base* and *Apex* taper-pointed.

Leaf, four to eight inches long, two to three inches wide; smooth above and below; with straight ribs terminating in the bristle-teeth.

Bark of trunk grayish and in young trees very smooth.

Fruit, with large bristly husks. Usually there are two or three nuts pressed closely in each cell, and therefore flat on one or both sides. The nut, though smaller, is sweeter and more delicate than in the European variety, the "Spanish Chestnut."

Found, from Southern Maine to Delaware and Southern Indiana; southward along the Alleghany Mountains and west to Middle Kentucky and Tennessee. Its finest growth is on the western slopes of the southern Alleghany Mountains.

A tree fifty to eighty feet high or more, with light, soft wood, largely used in cabinet-work, for railway ties, posts, etc.

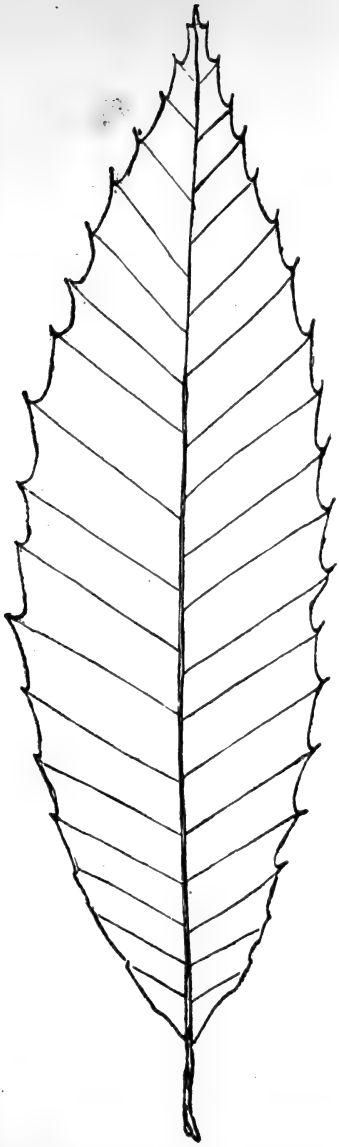


Fig. 34.—Chestnut. C. Satìva (L.), var. Americàna (Michaux), Sarg.
NATURAL SIZE.

Genus FAGUS, L. (Beech.)

Fig. 35.—Beech. *F. ferruginea, Ait.*

Leaves, SIMPLE; ALTERNATE; EDGE SHARP-TOOTHED, WITH SMALL AND REMOTE TEETH.

Outline, oval or egg-shape. *Apex*, taper-pointed. *Base*, rounded.

Leaf, three to six inches long, about half as wide; a very "finished" leaf; when young, fringed with soft, white hairs; becoming smooth and polished; with distinct and straight unbranched side-ribs, ending in the teeth of the edge. The dead, bleached leaves often cling thickly to the branches throughout the winter.

Bark of the trunk, light gray, smooth, and unbroken.

Fruit, a small four-celled prickly burr, splitting half-way to the base when ripe, and with two sweet, three-sided nuts in each shell.

Found in rich woods, Nova Scotia to Florida and westward, with its finest growth on the "bluffs" of the lower Mississippi basin.

Large stately trees, with spreading branches and a delicate spray, fifty to eighty feet high. The wood is hard and very close-grained, and is used largely in the making of chairs, handles, plane-stocks, shoe-lasts, and for fuel. When the tree is not crowded, it sends out its nearly horizontal or drooping branches as low as from ten to thirty feet above the ground.

Lumber-men make the distinction of "Red Beech" and "White Beech," claiming that the former is harder, with a redder and thicker heart-wood.

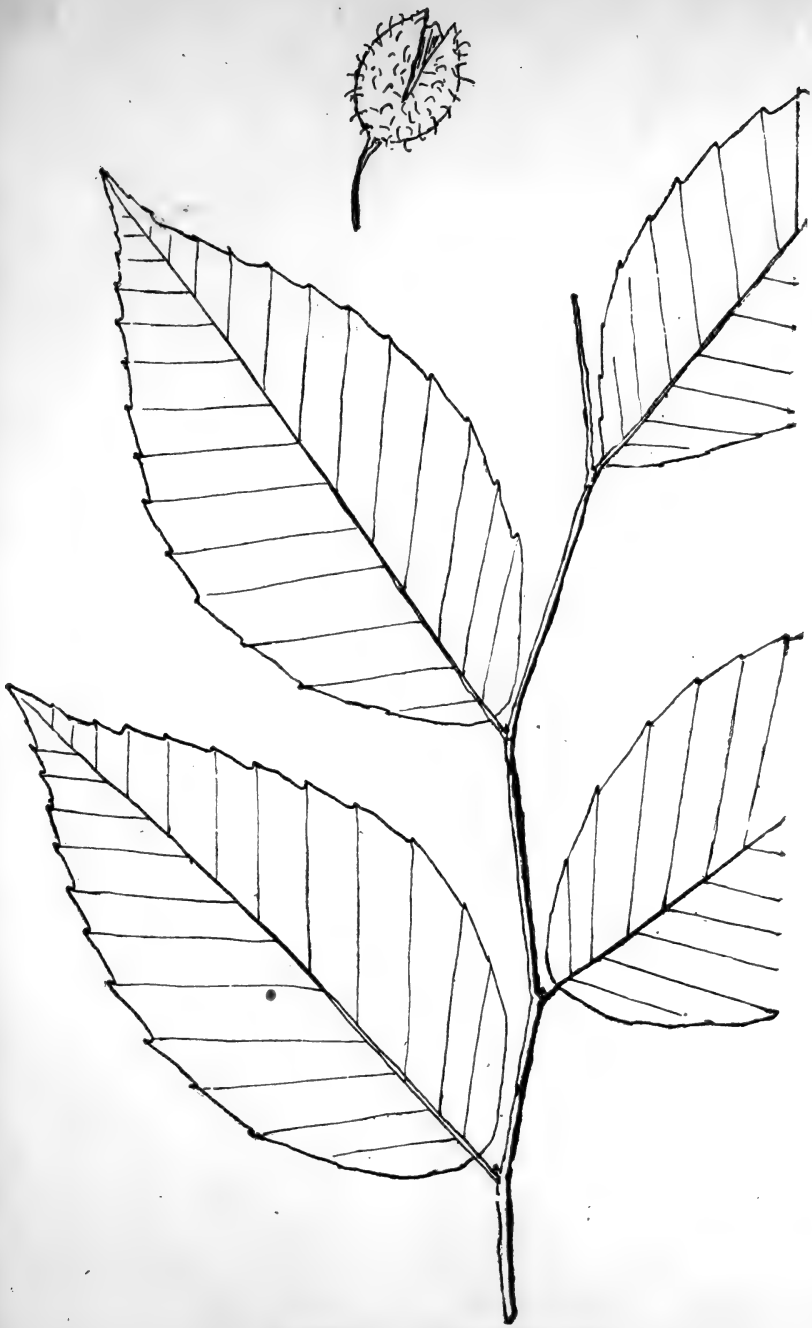


Fig. 35.—Beech. (F. ferruginea, Ait.)
NATURAL SIZE.

Among woodsmen and the Indians, the Beech is said to be a favorite refuge in thunder-storms. They claim that it is scarcely ever struck by lightning.

Lumber-men claim a difference in the quality of trees which retain their leaves and those which shed them. "Said a neighbor to me one day: 'You might 'a knowed that beech would split hard with all the dry leaves on it,"—and it did. That was the first I'd ever heard of the sign, but I've never known it fail since."

LIST OF WILLOWS.

(A) Native trees; all small:
- Black Willow (S. nigra, Marshall).
- Scythe-leaved Willow (S. n., var. falcata, **Torr.**).
- (S. amygdaloides, Anders.).
- Shining Willow (S. lùcida, Muhl.).
- Long-beaked Willow (S. rostrata, Richards).

(B) Not native trees; all large:
- White Willow (S. alba, L.).
- Blue Willow (S. a., var. cærùlea).
- Yellow Willow (S. a., var. vittelìna).
- Weeping Willow (S. Babylonica, **Tourn.**).
- Crack Willow (S. fragilis, L.).

Genus SALIX, L. (Willow.)

From two Celtic words meaning "near" and "water."

Fig. 36, *a* and *b*.—**Black Willow.** *S. nigra, Marsh.*

Leaves, SIMPLE; ALTERNATE; FINELY AND SHARPLY TOOTHED.

Outline, long and narrow. *Apex,* long, taper-pointed. *Base,* pointed or slightly rounded.

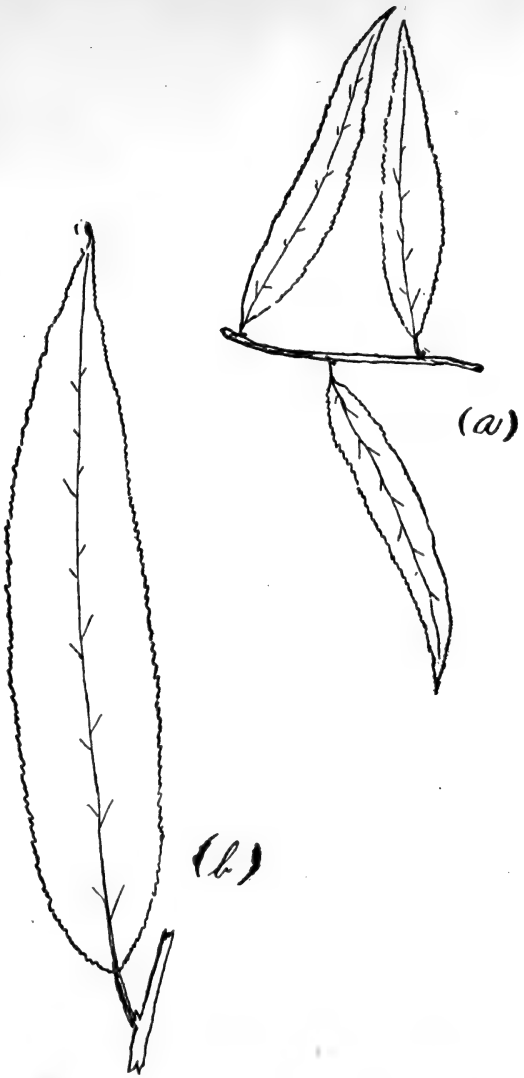


Fig. 36.—Black Willow. (S. nigra, Marsh.)

a. Commonest form. *b*. Large form.

NATURAL SIZE.

Leaf-stem, short and *woolly*.

Leaf, one and a half to four inches long; commonest length about two inches (Fig. 33, *a*); downy when young, becoming smooth excepting on the upper side of the mid-rib, which is usually woolly.

Bark of trunk, dark and rough; branches very brittle at the base and yellowish; twigs tough and purplish or yellow.

Found, in Southern New Brunswick and Ontario, and from Northern Vermont southward. Common on low ground, especially in New York and Pennsylvania.

A small tree, fifteen to twenty feet high; quite variable in the style of its foliage; the latest to flower, in May.

S. amygdaloides, *Anders.* (sometimes considered a variety of S. nigra) is found on the shores of the Great Lakes and westward.

Fig. 37.—Scythe-leaved Willow. *S. nigra, var. falcàta, Torr.*

Leaves, SIMPLE; ALTERNATE; EDGE VERY FINELY SHARP-TOOTHED.

Outline, long and narrow, often "scythe-shaped." *Apex*, long, taper-pointed. *Base*, gradually narrowing and pointed or slightly rounded.

Leaf-stem, short. *Stipules* (two small, leaf-like appendages at the base of the leaf-stem), *not falling off when young*, as in most of the willows; *moon-shaped, finely toothed*, wider than long.

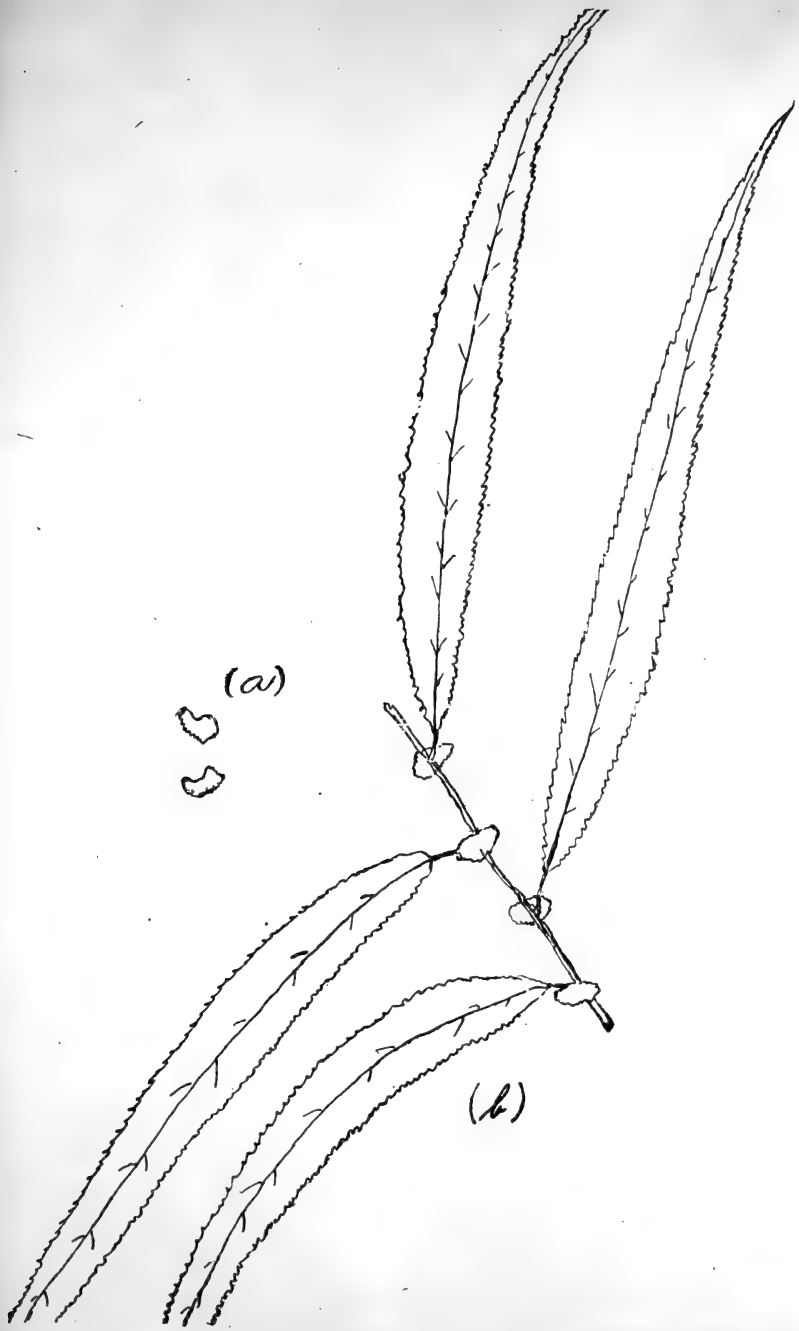


Fig. 37.—Scythe-leaved Willow. (S. n., var. falcàta, Torr.)
a. Stipules. *b*. Leaves.
NATURAL SIZE.

Leaf, four to eight inches long; green and smooth above and below (silky-downy when young).

Found, on low ground from New England to the Middle States and westward.

A small tree (or sometimes a shrub). The persistent stipules and the length of the leaf furnish ready signs for distinguishing it from S. nigra.

Fig. 38.—Shining Willow, Glossy Broad-leaved Willow.
S. lucida, Muhl.

Leaves, SIMPLE; ALTERNATE; EDGE VERY FINELY AND SHARPLY TOOTHED.

Outline, long egg-shape. Apex, taper-pointed. *Base*, rounded or slightly pointed.

Leaf-stem, about one fourth to one half inch long.

Leaf-buds, yellowish and smooth.

Leaf, about three to five or six inches long, one inch or more wide; dark above, smooth and shining above and below. Middle ribs usually whitish, and distinct above.

Found, from New England southward to Chester County, Pennsylvania, west and north. Rather common, usually on wet grounds.

A small tree (or often a shrub) twelve to twenty-five feet high.

Fig. 38.—Shining Willow. (S. lùcida, Muhl.)
NATURAL SIZE.

Fig. 39.—Long-beaked Willow, Ochre-flowered Willow. *S. rostràta, Richards.*

Leaves, SIMPLE; ALERNATE; EDGE USUALLY OBSCURELY TOOTHED, but varying from quite sharp-toothed to almost entire and slightly wavy.

Outline, oval or reverse egg-shape. *Apex*, sharp (or sometimes rather blunted). *Base*, narrowing to a point (or sometimes slightly rounded).

Leaf, two to four inches long; soft, downy, and almost velvety beneath; smoothish above; ribs distinct.

Bark of trunk, dark colored; of the branches, usually yellow; twigs, reddish-brown, straight and tough, downy when young, becoming smooth.

Found, along borders of woods, and on low grounds, from New England to Pennsylvania, far westward and northward.

A small tree (or sometimes a shrub), four to fifteen feet high.

Fig. 40.—White Willow. [*S. alba, L.*]

Leaves, SIMPLE; ALTERNATE; EDGE SHARP-TOOTHED, with the teeth somewhat thickened.

Outline, narrow lance-shape. *Apex*, taper-pointed. *Base*, pointed.

Leaf, about five inches long, three quarters of an inch wide; surface with white silky hairs beneath, and often above; branches not yellow, and very brittle at the base.

Introduced from Europe, but now common around houses and in low grounds.

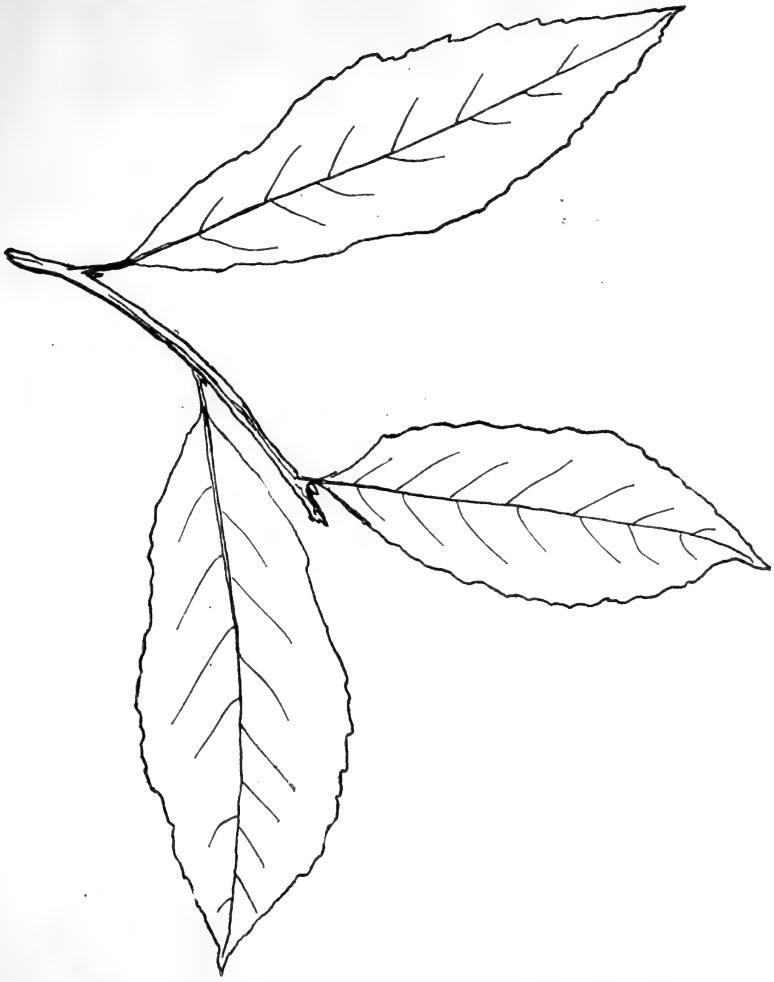


Fig. 39.—Long-beaked Willow. (S. rostràta, Richards.)
NATURAL SIZE.

A very large and familiar tree (fifty to eighty feet high), one of the largest of the Willows; low-branching; thick-set, of tough and rapid growth. A stake set in the ground grows readily. The silvery look of the tree (especially in a strong wind) is due to the gloss of its downy leaves.

The *Blue Willow* [var. cærùlea S.] is naturalized in Massachusetts.

Fig. 41.—Yellow Willow, Golden Osier. [*S. alba, var. vitellìna, S. and B.*]

Leaves, SIMPLE; ALTERNATE; EDGE SHARP-TOOTHED, with the teeth somewhat thickened.

Outline, narrow lance-shape. *Apex*, taper-pointed; in the *young leaves* often *broad and rounded.* *Base*, pointed.

Leaf, small (two to three and a half inches long; about one half to five eighths of an inch wide); surface with white, silky hairs beneath and often above, especially in the young leaves.

Branches, brittle at the base, smooth and shining and *yellow.*

Blossoms, in May.

Introduced, from Europe, but now found throughout the United States. Common around houses and in low grounds.

A broad-spreading tree (thirty to forty feet high), branching low, and with the branchlets thick and rather erect. The tree has a *yellowish look*, due to the color of its twigs and branches.

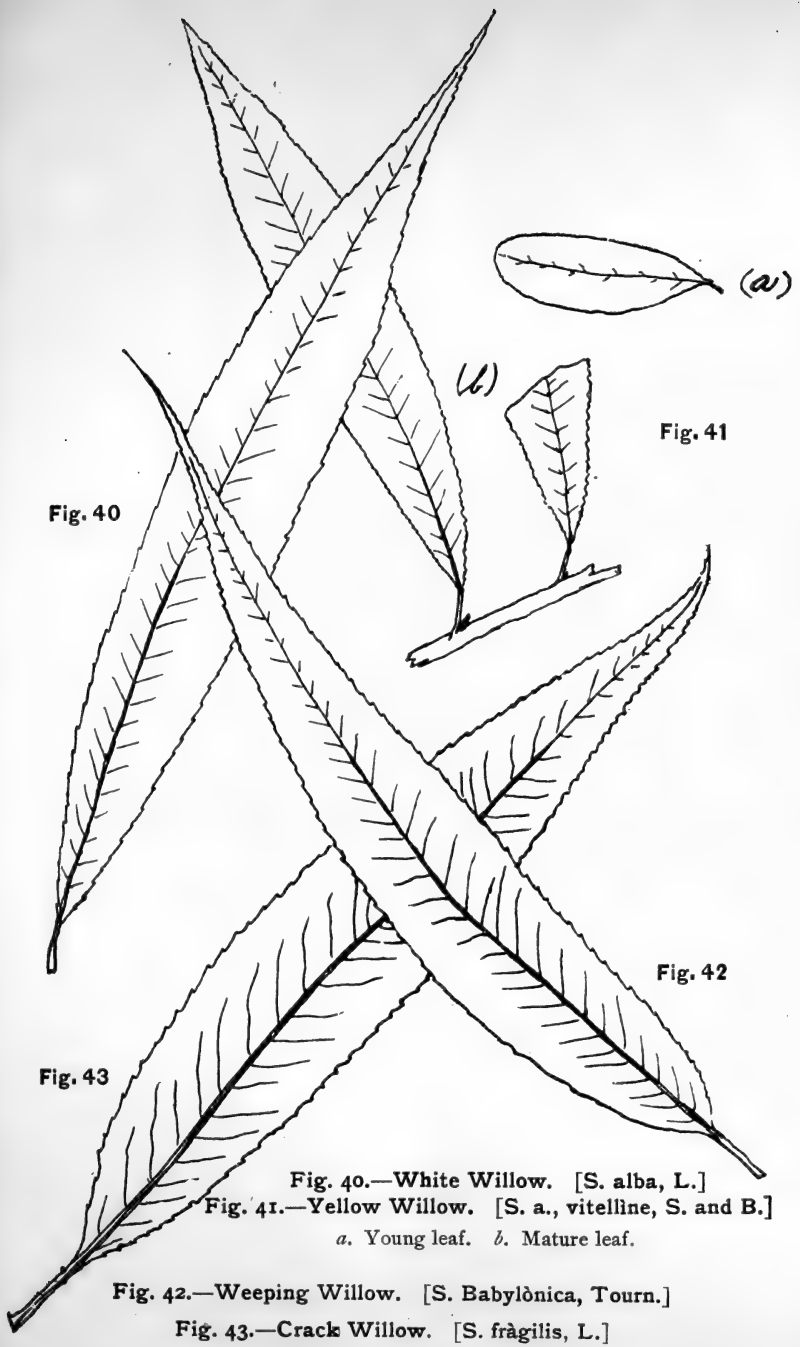


Fig. 40.—White Willow. [S. alba, L.]
Fig. 41.—Yellow Willow. [S. a., vitellìne, S. and B.]
a. Young leaf. *b.* Mature leaf.

Fig. 42.—Weeping Willow. [S. Babylònica, Tourn.]
Fig. 43.—Crack Willow. [S. fràgilis, L.]
NATURAL SIZE.

"The French, finding their native forests giving out, took to planting a species of willow, *Salix vitellìna*, largely for hoops. So successful have they been that, besides raising all they want for their own use, they now export largely to British markets. Scotch herring barrels are chiefly bound with French willow hoops."

Fig. 42.—Weeping Willow. [*S. Babylònica, Tourn.*]

Leaves, SIMPLE; ALTERNATE; EDGE SHARP-TOOTHED.

Outline, narrow lance-shape. *Apex*, taper-pointed. *Base*, pointed.

Leaf, about five inches long by three fourths of an inch wide; somewhat silky, or smooth.

Branches and branchlets, very long, curved, and drooping nearly to the ground.

Introduced, from Europe, now common, and much used in ornamental cultivation.

A tree thirty to forty feet high.

The Latin name (Babylònica) was suggested by the lament of the Hebrews, in the 137th Psalm.

"By the rivers of Babylon there we sat down:
Yea we wept when we remembered Zion.
We *hanged our harps upon the willows* in the midst thereof."

Fig. 43.—Crack Willow. [*S. fràgilis, L.*]

Leaves; SIMPLE; ALTERNATE; EDGE STRONGLY AND SOMEWHAT UNEVENLY TOOTHED, the teeth thickened and their points slightly incurved, so as to appear somewhat blunted.

Outline, narrow lance-shape. *Apex,* taper-pointed. *Base,* taper-pointed.

Leaf-stem, smooth, with *two small warts* on the upper side near the base of the leaf.

Leaf, about five or six inches long, about seven eighths of an inch wide; dark and smooth above; lighter and smooth below (slightly silky when young).

Branches, smooth, shining, and greenish; very brittle at the base, cracking off almost "at a touch."

Introduced, from Europe.

A tree sometimes sixty to eighty feet high, with a bushy head and irregular branches. Its withes are used for basket-work.

"The greene willow boughes with the leaves may very well be brought into chambers and set about the beds of those that be sicke of agues, for they do mightily coole the heate of the aire, which thing is a wonderfull refreshing to the sicke patients."—GERARDES' HERBAL.

Genus POPULUS, L. (Aspen, Poplar.)

From a Latin word meaning the people; either because the tree was often planted along public walks, or on account of the restlessness of its leaves.

Fig. 44.—Aspen, White Poplar. *P. tremulòides, Michx.*

Leaves, SIMPLE; ALTERNATE; EDGE SHARP-TOOTHED, with rounded hollows between.

Outline, rounded. *Apex*, short, sharp-pointed. *Base*, slightly heart-shaped.

Leaf-stem, slender and very much flattened sidewise.

Leaf, two to two and a half inches wide, and usually about one half inch shorter than wide; dark green; smooth on both sides when mature, with a slight down on the edge. Ribs distinct above and below and whitish.

Bark of trunk, greenish-white and smooth, often with blotches of very dark brown, especially under the ends of the branches. The bark is exceedingly bitter.

Found, from Northern Kentucky and the mountains of Pennsylvania northward to Hudson Bay and Newfoundland, northwest to the Arctic Ocean, and along the Rocky Mountain slopes. It is the most widely distributed of North American trees.

A tree twenty to fifty feet high, with white, soft wood that is largely used in place of rags in making coarse paper. The tremulousness of its foliage, which the slightest breeze stirs, is due to the thinness of the sidewise-flattened leaf-stems.

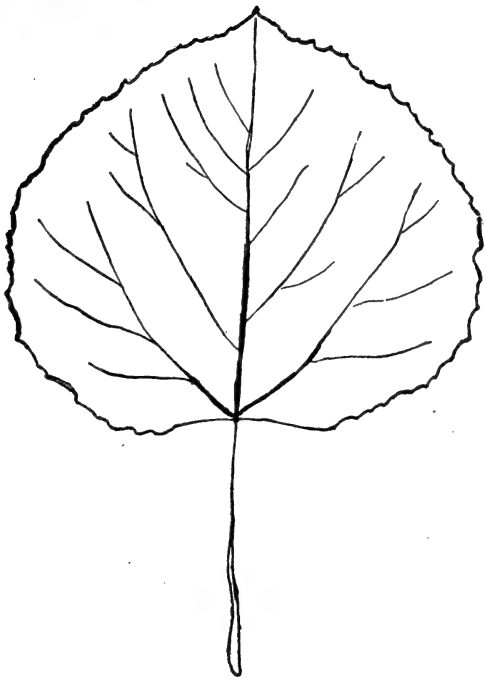


Fig. 44.—Aspen. (P. tremuloides, Michx.)
NATURAL SIZE.

Tradition accounts differently for the motion of the leaves. It says that the wood of the aspen tree was taken for the Saviour's cross, and that, ever since, the tree has shivered.

Another tradition claims that, when Christ went by on his way to Calvary, all the trees sympathized and mourned, excepting the aspen; but when he died, there fell upon the aspen a sudden horror of remorse, and such a fearful trembling as has never passed away.

In describing the occupations of the fifty maidens in the hall of the "gorgeous palace" of King Alcinous, Homer says:

> ". . . some wove the web
> Or twirled the spindle, sitting, with a quick
> Light motion *like the aspen's glancing leaves.*"

Fig. 45.—Large-toothed Aspen. *P. grandidentàta, Michaux.*

Leaf, SIMPLE; ALTERNATE; EDGE LARGE-TOOTHED, with the hollows rounded.

Outline, wide egg-shape. *Apex*, sharp-pointed. *Base*, squared, or slightly rounded.

Leaf-stem, long and slender, and flattened sidewise.

Leaf, three to five inches long, smooth on both sides when mature; white, and covered thickly with silky wool when young. Ribs, whitish and distinct above.

Bark of the trunk, smooth, and of a soft, light greenish-gray; when old, becoming somewhat cracked. On the young branches the bark is dark.

Found, in Nova Scotia and New Brunswick, through the Northern States, along the Alleghany Mountains to North Carolina, and west to Wisconsin and Iowa. Rare at the South, common at the North.

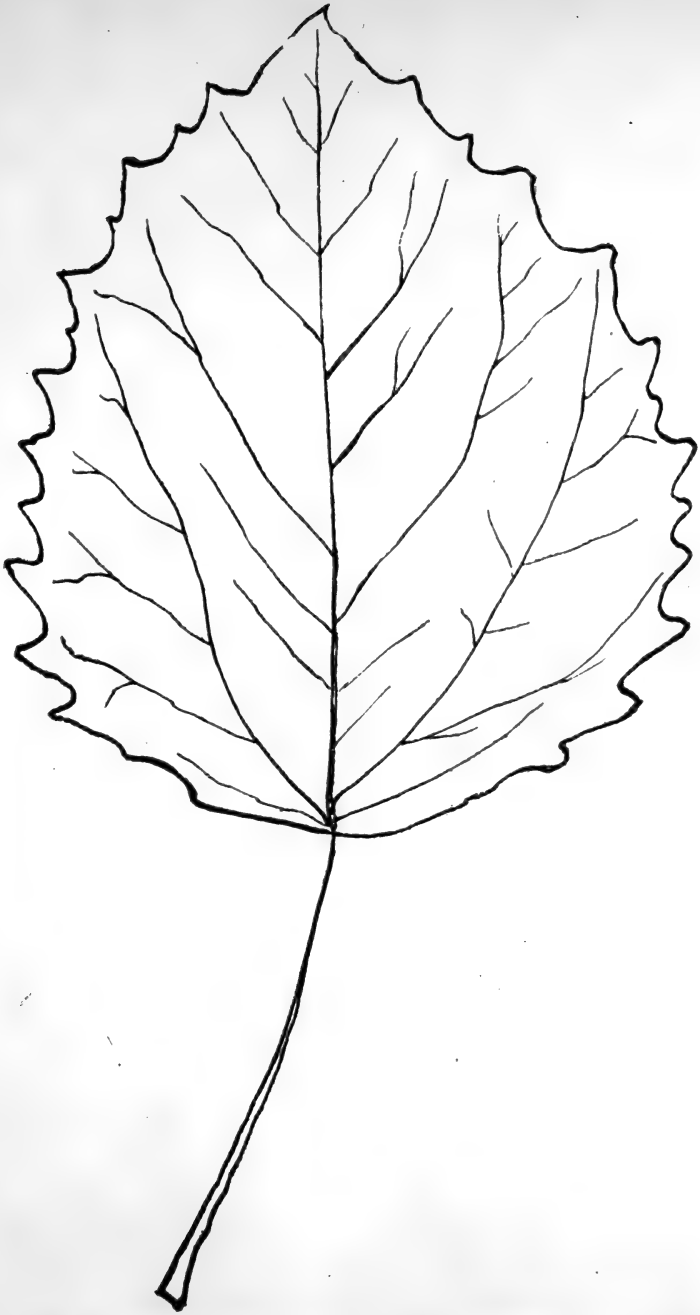


Fig. 45.—Large Toothed Aspen. (P. grandidentàta, Michx.)
NATURAL SIZE.

A tree forty to eighty feet high, with open, crooked branches. Large quantities of the soft, white wood are ground into pulp for making paper. "In both this and the preceding species, the leaves of young sprouts are often differently shaped and toothed, and much enlarged."—(Porter.)

Poplar wood, like other soft woods, is not usually esteemed for durability; but an old couplet, said to have been found inscribed on a poplar plank, teaches differently:

"Though 'heart of Oak' be e'er so stout,
Keep me dry, and I'll see him out."

Fig. 46.—Downy-leaved Poplar, River Cottonwood, Swamp Cottonwood. *P. heterophylla, L.*

Leaves, SIMPLE; ALTERNATE; EDGE TOOTHED.

Outline, roundish egg-shape. *Apex*, usually *blunt (never taper-pointed)*. *Base*, heart-shape, sometimes with the lobes so *close* or overlapping as to cover the end of the leaf-stem.

Leaf-stem, nearly round.

Leaf, three to six inches long (on young sprouts, eight to ten inches); when young, thickly covered with white down; becoming smooth, except on the ribs below.

Found, in borders of swamps, from Long Island southward to Southern Georgia, through the Gulf States to Western Louisiana, and northward to Southern Illinois and Indiana. Rare and local.

A tree sixty to eighty feet high.

Fig. 46.—Downy-leaved Poplar. (P. heterophylla, L.)
NATURAL SIZE.

Fig. 47.—Cottonwood, Poplar, Necklace Poplar, River Poplar.
P. monilifera, Ait. P. angulata, Ait.

Leaves, SIMPLE; ALTERNATE; EDGE SOMEWHAT IRREGULARLY TOOTHED.

Outline, broad egg-shape (approaching triangular-shape). *Apex*, long, taper-pointed. *Base*, squared, slightly hollowed, or slightly pointed.

Leaf-stem, long and slender and much compressed sidewise.

Leaf, two to three and a half inches long (much larger on young shoots); length and width nearly the same; smooth; ribs distinct and whitish on both sides, irregular, and branching.

Bark of trunk, light "granite-gray," smooth on young trunks, becoming somewhat rough with age, and with rounded up-and-down furrows. New and vigorous shoots are green, and marked with short white or brownish lines.

Seeds, covered with a white, cotton-like fibre.

Found, from Western New England southward to Western Florida, westward to the Rocky Mountains. The common "cottonwood" of the West, bordering all streams flowing east from the Rocky Mountains.

A tree eighty to one hundred feet high. The very light and soft wood is largely used in making paper pulp, for light boxes, and for fuel.

Experiments have been made in separating and weaving the cottony fibre of the poplar seeds. It can be manufactured into cloth, but not in paying quantity and quality.

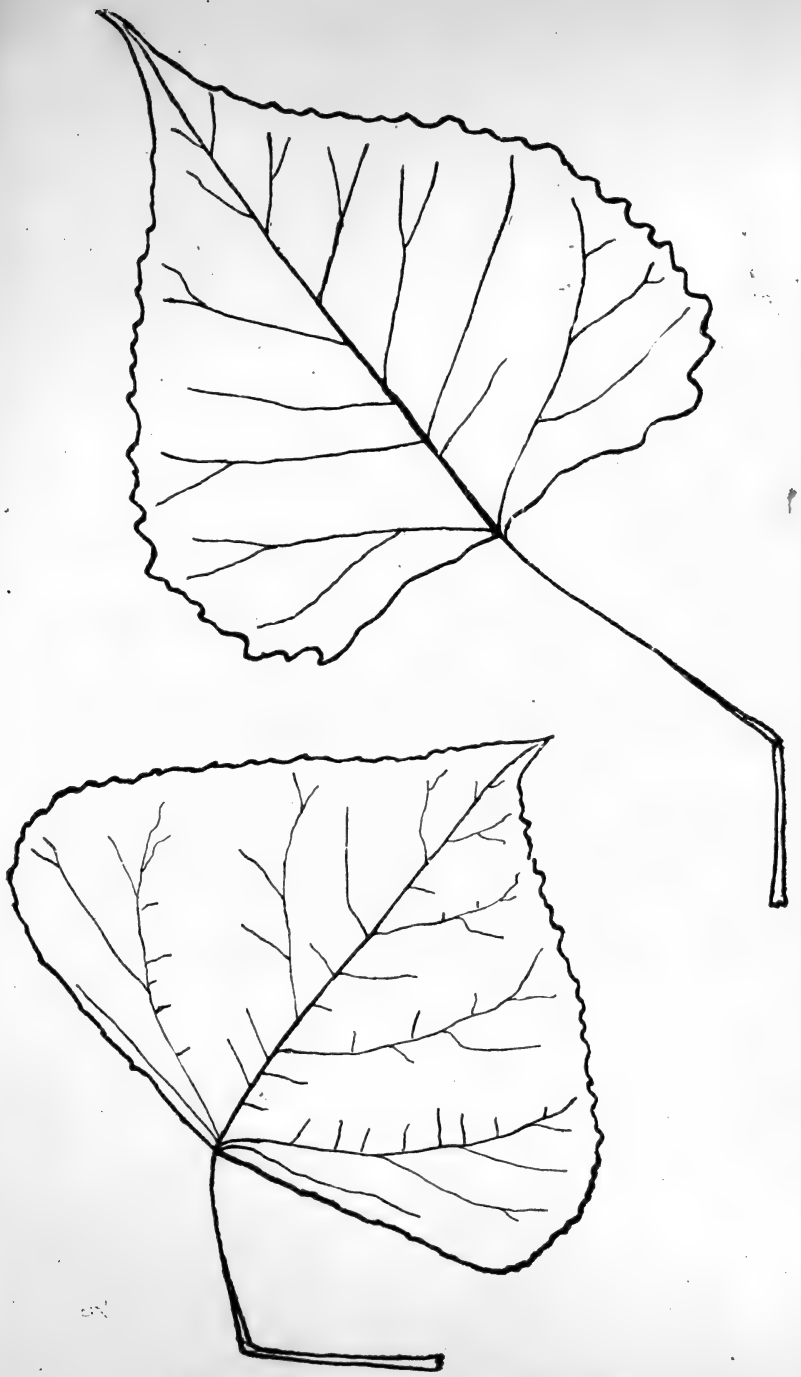


Fig. 47.—Cottonwood. (P. monilifera, Ait.)
NATURAL SIZE.

Fig. 48.—Balsam Poplar, Tacamahac. *P. balsamìfera, L.*

Leaves, SIMPLE; ALTERNATE; EDGE FINELY AND RATHER SHARPLY TOOTHED.

Outline, egg-shape. *Apex*, taper-pointed. *Base*, rounded.

Leaf-stem, nearly smooth, the lower half *rounded*, the upper part only *slightly* flattened. The *leaf-buds* in the spring are large and yellow, and covered with a fragrant gum (as, to some extent, are the buds of most of the poplars).

Leaf, four to six inches long; when young, yellowish above, becoming bright green; whitish, and "net-veined" below; smooth.

Found in Northern New England, Central Michigan, and Minnesota, and far northward.

A tree sixty to seventy feet high, with very light and soft wood.

Fig. 49.—Balm of Gilead, Heart-leaved Balsam Poplar. *P. balsamìfera, var. càndicans (Ait.), Gray.*

Leaves, SIMPLE; ALTERNATE; EDGE TOOTHED.

Outline, egg-shape. *Apex*, taper-pointed. *Base*, heart-shape.

Leaf-stem, usually hairy, nearly round. The *leaf-buds* in the spring are large and varnished, and very fragrant.

Leaf, four to six inches long, nearly as broad; yellowish when young, becoming dark green above, and whitish beneath; net-veined.

Bark, smooth and greenish, and often dark-spotted.

Found, seldom or never growing wild, but common in cultivation.

A tree forty to fifty feet high, loosely and irregularly branched, and with abundant foliage.

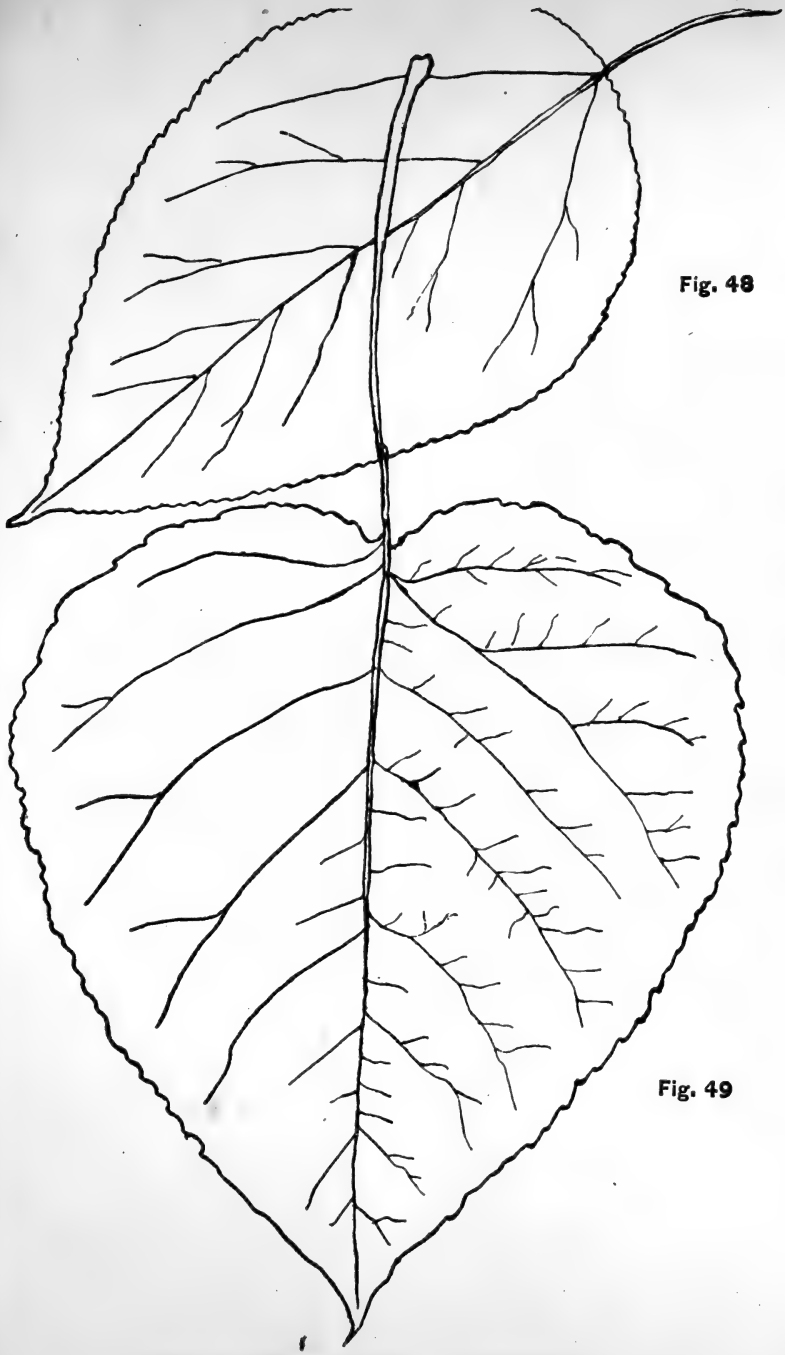


Fig. 48

Fig. 49

Fig. 48.—Balsam Poplar. (P. balsamìfera, L.)
Fig. 49.—Balm of Gilead. P. b. càndicans (Ait.), Gray.
NATURAL SIZE.

Fig. 50.—Lombardy Poplar. [*P. dilatàta, Ait.*]

Leaves, SIMPLE; ALTERNATE; EDGE TOOTHED.

Outline, very broad oval (approaching diamond shape). *Apex*, pointed. *Base*, pointed.

Leaf-stem, flattened sidewise.

Leaf, usually about two inches long, width and length about the same.

Introduced about one hundred years ago from Italy, and now often found in old settlements.

A tall and very slender tree, with crowded, perpendicular branches.

Fig. 51.—Silver-Leaf Poplar, Abele, White Poplar. [*P. alba, L.*]

Leaves, SIMPLE; ALTERNATE; EDGE USUALLY LOBED (the lobes toothed).

Outline, broad egg-shape. *Base*, usually slightly heart-shaped. *Apex* of the lobes, blunt-pointed.

Leaf-stem, downy and nearly round.

Leaf, usually about two and a half inches long; when mature, smooth and dark green above, below downy and almost snow-white. In the young leaves both surfaces and the leaf-stem are snowy-white and downy.

A native of Europe; now widely introduced.

A very ornamental tree, but troublesome in cultivation, and now out of favor because of the abundance of suckers that spring from its roots.

NOTE.—See *Chestnut Oaks* with their genus under Sec. A, *III. (a)*,

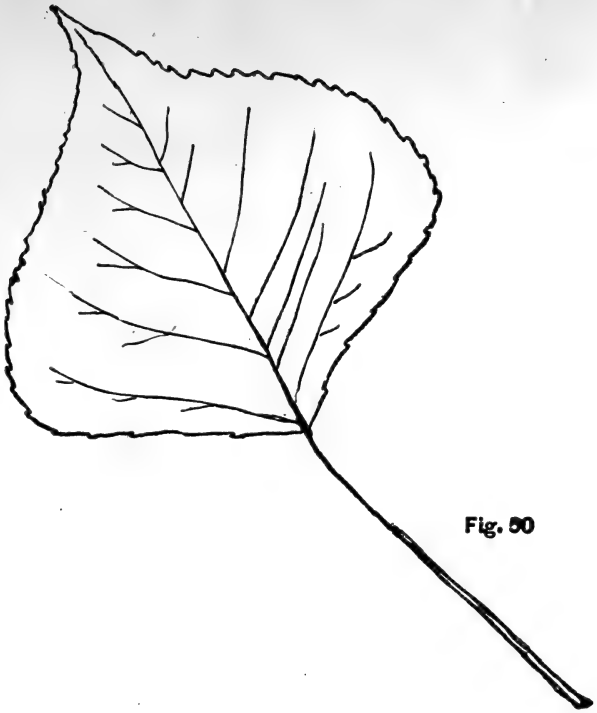


Fig. 50

Fig. 51

Fig. 50.—Lombardy Poplar. [P. dilatàta, Ait.]
Fig. 51.—Silver-Leaf Poplar. [P. alba, L.]
NATURAL SIZE.

TREES WITH SIMPLE LEAVES

LEAVES ALTERNATE

CONTINUED

(EDGE LOBED)

A III

(a) and *(b)*

Genus LIRIODÈNDRON, L. (Tulip Tree.)

From two Greek words meaning lily and tree.

Fig. 52.—Tulip Tree, Whitewood, Yellow Poplar.* *L. tulipifera, L.*

Leaves, SIMPLE; ALTERNATE; EDGE LOBED (lobes entire).

Outline, rounded. *Apex*, cut almost squarely across, with a shallow hollow, giving a square look to the upper half of the leaf. *Base*, usually heart-shape.

Leaf, three to five inches long and wide; very smooth; with four to six lobes (two lobes at the summit; at the sides two, or two large and two small).

Bark of trunk, dark ash-color and slightly rough.

Flowers, four to six inches across; greenish-yellow, marked within with orange; somewhat tulip-like, fragrant, solitary. May, June.

Found, from Southwestern Vermont to Michigan, southward and westward. Its finest growth is in the valley of the lower Wabash River and along the western slopes of the Alleghany Mountains.

Among the largest and most valuable of the North American trees. It is usually seventy to one hundred

* The name should be dropped. The tree is not a poplar.

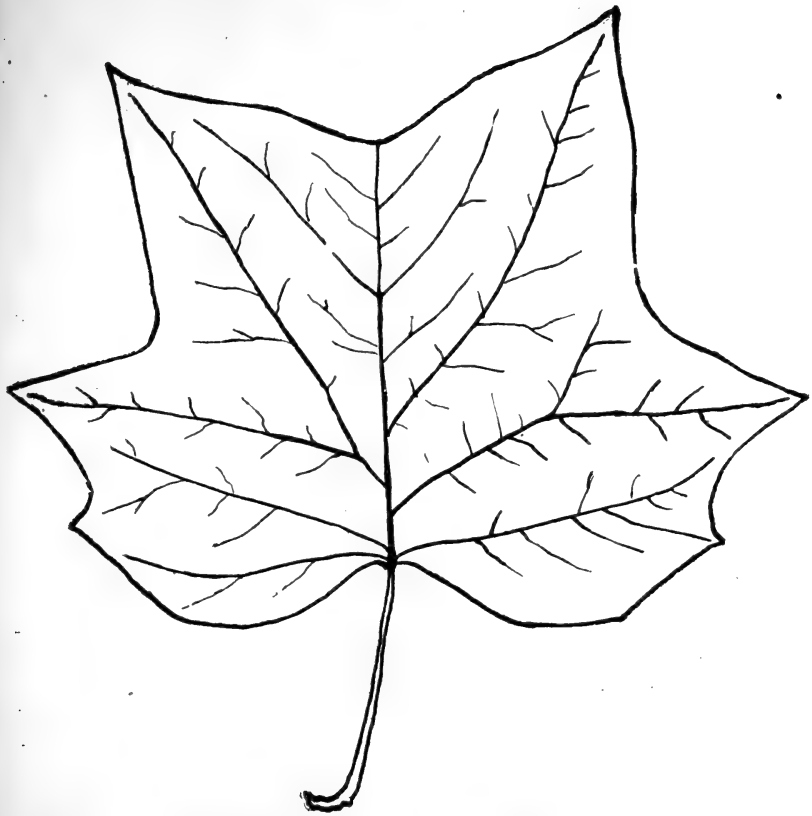


Fig. 52.—Tulip Tree. (L., tulipifera, L.)
NATURAL SIZE.

feet high, often much higher, with a straight, clear trunk, that divides rather abruptly at the summit into coarse and straggling branches. The wood is light and soft, straight-grained, and easily worked, with the heart wood light yellow or brown, and the thin sap wood nearly white. It is very widely and variously used—for construction, for interior finish, for shingles, in boat-building, for the panels of carriages, especially in the making of wooden pumps and wooden ware of different kinds.

I asked a carpenter: "Hope, is n't it the tulip wood (which you call poplar) that the carriage-makers use for their panels?"

"Yes, and the reason is, because it shapes so easily. If you take a panel and wet one side, and hold the other side to a hot stove-pipe, the piece will just hug the pipe. It 's the best wood there is for panelling."

"Of all the trees of North America with deciduous leaves, the tulip tree, next to the buttonwood, attains the amplest dimensions, while the perfect straightness and uniform diameter of its trunk for upwards of forty feet, the more regular disposition of its branches, and the greater richness of its foliage, give it a decided superiority over the buttonwood and entitle it to be considered as one of the most magnificent vegetables of the temperate zone."—MICHAUX.

The tulip tree was very highly esteemed by the ancients; so much so that in some of their festivals they are said to have honored it by pouring over its roots libations of wine.

GUIDE TO THE OAKS.

SECTION I.—Leaves, *not* sharp-pointed * or bristle-tipped. Fruit, annual.

A. Leaves, deeply lobed, with the ends of the lobes and the hollows rounded. Pp. 102–106. (The White Oaks.)

B. Leaves, wavy-toothed.* Pp. 108–112. (The Chestnut Oaks.)

SECTION II.—Leaves, sharp-pointed or bristle-tipped. Fruit, biennial.

A. Leaves, abruptly widening above and slightly lobed, lobes rounded † and bristle-tipped. P. 114. (Black Jack.)

B. Leaves, deeply lobed; the ends of the lobes sharp and bristle-tipped.

(1) Mature leaves downy beneath. P. 116. (Spanish Oak.)

(2) Mature leaves smooth on both sides, or nearly so. Acorn-cup with coarse scales and more or less top-shaped, and covering one third or nearly one half of the nut. Pp. 118–122. (Scarlet Oak and Black Oak.)

(3) Mature leaves smooth on both sides, or nearly so. Acorn-cup with fine scales, shallow, saucer-shape, much shorter than the nut. Pp. 122–124. (Red Oak and Pin Oak.)

C. Leaves, entire, very narrow, pointed, and bristle-tipped. Pp. 126–128. (The Willow Oaks.)

* Excepting yellow Chestnut Oak, which is usually sharp-toothed.

† Excepting sometimes Black Jack.

Genus Quercus, L. (Oak.)

Possibly from a Celtic word meaning to inquire, because it was among the oaks that the Druids oftenest practised their rites.

Fig. 53.—White Oak. *Q. alba, L.*

Leaves, SIMPLE; ALTERNATE; EDGE LOBED; (edge of the lobes entire or sometimes coarsely notched and hollowed at their ends.)

Outline, reverse egg-shape. *Base*, wedge-shape. *Apex* of lobes, rounded.

Leaf, quite variable in size and shape; four to seven inches long; smooth; pale beneath; the *lobes* oftenest five to nine, long and narrow, and sometimes widening toward the end, but at other times only three to five, short and broad, and radiating obliquely from the middle rib.

Bark of trunk, slightly roughened (comparatively smooth for an oak), light-gray; in older trees loosening in large, thin scales; the inner bark white.

Acorns, usually in pairs on a stem one fourth of an inch or more in length. *Cup*, rounded saucer-shape, not scaly, but rough and warty and much shorter than the nut. *Nut*, three fourths to one inch long, slightly egg-shape or oval; brown, sweet, and edible. October.

Found, from Ontario and the valley of the St. Lawrence southward to Florida, and westward to Southeastern Minnesota, Arkansas, and Texas. Its finest growth is on the western slopes of the Alleghany Mountains, and in the Ohio basin.

A noble tree, sixty to eighty feet or more in height, with hard, tough wood of very great value in many kinds of manufacturing, and for fuel. The withered, light-brown leaves often cling throughout the winter.

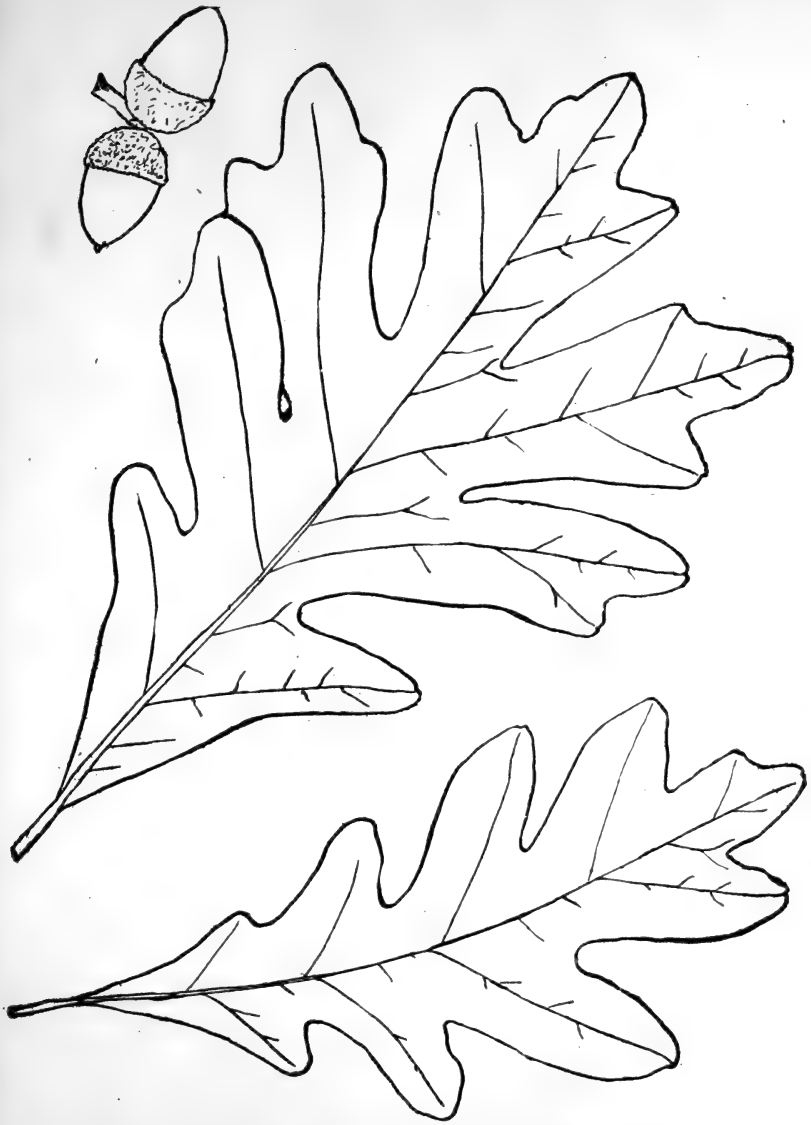


Fig. 53.—White Oak. (Q. alba, L.)
LEAVES AND FRUIT REDUCED ONE FOURTH.

The "oak-apples" or "galls" often found on oak-trees are the work of "gall-flies" and their larvæ. When green, tiny worms will usually be found at their centre. Quaint reference is made to these galls in Gerardes' "Herbal":

"Oak-apples being broken in sunder before they have an hole thorough them do fore shewe the sequell of the yeere. If they conteine in them a flie, then warre insueth; if a creeping worme, then scarcitie of victuals; if a running spider, then followeth great sickness or mortalitie."

The oak, probably more than any other tree, has been associated with worship of the gods. The "Talking Tree" of the sanctuary in Dodòna (the oldest of all the Hellenic sanctuaries, and second in repute only to that at Delphi) was an oak. Oak groves were favorite places for altars and temples of Jupiter. The Druids worshipped under the oak-trees.

Fig. 54.—Post Oak, Iron Oak, Rough-leaved White Oak.
Q. minor (Marsh), Sarg. Q. obtusilòba, Michx.

Leaves, SIMPLE; ALTERNATE; EDGE LOBED (edge of the lobes entire, or sometimes hollowed more or less deeply at the ends).

Outline, usually broad, reverse egg-shape or oval. *Base*, wedge-shape or round. *Apex* of lobes, rounded.

Leaf, four to six inches long; *rough* above and below; thick and coarse. The *lobes*, five to seven and exceedingly variable in size and shape, *radiating almost at right angles* from the middle rib; sometimes broad and squared, sometimes much narrowed toward their base, with the spreading ends themselves lobed or hollowed; often irregularly and unequally placed.

Bark of the trunk, resembling that of the white oak, but rather darker. Inner bark white.

Fig. 54.—Post Oak. Q. minor (Marsh), Sarg.
LEAVES AND FRUIT REDUCED ONE FOURTH.

Acorns, two to three together on a short stem (about one fourth inch), or single and nearly stemless. *Cup*, round saucer-shape, rather thin, with very small scales, not warty. *Nut*, about one half inch long; egg-shape or oval; more than one third covered by the cup; shining blackish-brown, and often slightly striped; very sweet.

Found, from the coast of Massachusetts southward and westward.

A tree twenty to fifty feet high, of value, especially in the Southwestern States, where it is very common.

Fig. 55.—Burr Oak, Mossy-cup Oak, Over-cup White Oak.
Q. macrocàrpa, Michx.

Leaves, SIMPLE; ALTERNATE; LOBED (the edge of the lobes entire, or of the larger ones sometimes wavy).

Outline, reverse egg-shape. *Base*, wedge-shape. *Apex* of the lobes, rounded.

Leaf, six to fifteen inches long (the longest of the oak-leaves); smooth above, downy beneath; the lobes usually long and rather irregular, the middle ones longest and often extending nearly to the middle rib.

Bark of the young branches always marked with corky wings or ridges.

Acorns, large, with short stems. *Cup*, two thirds to two inches across, roughly covered with pointed scales, and heavily fringed around the nut. *Nut*, very large (one to one and a half inches long); broad egg-shape; one half to two thirds or often wholly enclosed by the cup.

Found, along the coast of Maine southward as far as the Penobscot, in Western New England, in Western New York, in Pennsylvania, and thence westward to the foot-hills of the Rocky Mountains of Montana,

Fig. 55.—Burr Oak. (Q. macrocàrpa, Michx.)
LEAVES AND FRUIT REDUCED ONE FOURTH.

and from Central Nebraska and Kansas southwest to the Indian Territory and Texas.

It is found farther west and northwest than any other oak of the Atlantic forests. In the prairie region it forms the principal growth of the "Oak Openings."

One of the most valuable and widely distributed oaks of North America, growing sixty to eighty feet in height, or more, with hard, tough wood resembling that of the White Oak.

"The most interesting thing about this tree, perhaps, is its power, quite unknown in the other White Oaks, of adapting itself to very different climatic conditions, which enables it to live in the humid climate of Maine and Vermont, to flourish in the somewhat drier climate of the Mississippi Valley, and to exist [still farther west] in the driest and most exposed region inhabited by any of the Eastern American oaks."—SARGENT.

Q. m. olivæfŏrmis is a variety found only in a few districts (near Albany and in Pennsylvania), having narrower and rather more deeply lobed leaves.

Fig. 56.—Swamp White Oak. *Q. bĭcolor, Willd. Q. prinus, var. discolor, Michx.*

Leaves, SIMPLE; ALTERNATE; EDGE QUITE DEEPLY WAVY-TOOTHED.

Outline, reverse egg-shape or oval. *Apex*, blunt-pointed. *Base*, pointed.

Leaf, five to eight inches long; smooth, and rather bright green above; *whitish-downy beneath*, becoming almost silvery-white; often with a rather deep hollow just below the middle, and usually abruptly spreading above; the teeth unequal, longest toward the middle of the leaf, sometimes almost long enough

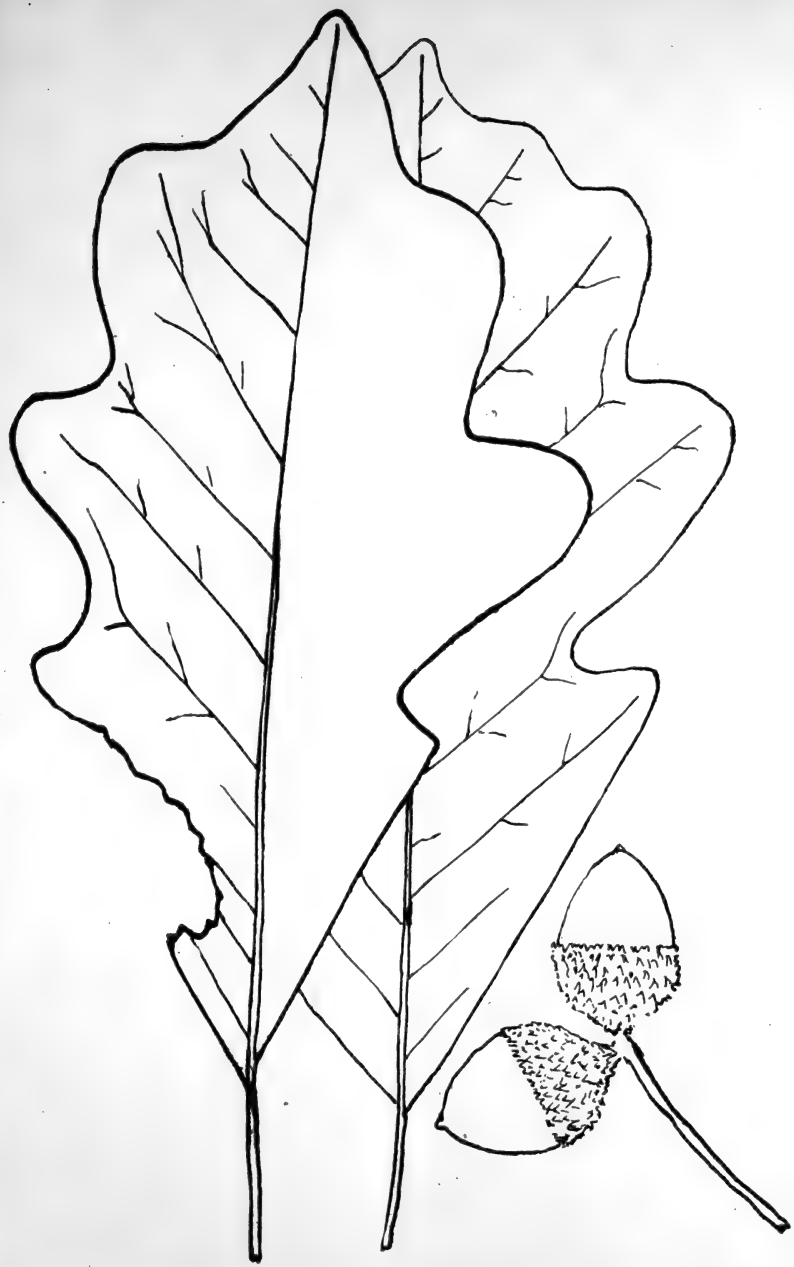


Fig. 56.—Swamp White Oak. (Q. bicolor, Willd.)

NATURAL SIZE.

to be called lobes; mostly rounded at the apex, but sometimes ending in a hard point; the main ribs prominent and rust-colored.

Bark of trunk, grayish-white, dividing into large, flat scales.

Acorns, usually in pairs on a stem one and a quarter to three inches long. *Cup*, rounded, rather thin, rough, with sharp scales; the upper scales bristle-tipped, forming a border, or sometimes a fringe, along the edge; slightly downy within. *Nut*, one inch or less in length, egg-shape; sweet. October.

Found from Southern Maine and the Upper St. Lawrence to Southeastern Iowa and Western Missouri, south to Delaware and along the Alleghany Mountains to Northern Georgia; along borders of streams and in swamps, in deep, rich soil. Its finest growth is in the region of the Great Lakes.

A tree thirty to sixty feet high or more, with wood similar in value to that of the White Oak.

Fig. 57.—Chestnut Oak, Swamp Chestnut Oak, Rock Chestnut Oak. *Q. prinus, L. Q. prinus, var. monticolor, Michx.*

Leaves, SIMPLE; ALTERNATE; EDGE COARSELY AND EVENLY WAVY-TOOTHED.

Outline, reverse egg-shape or sometimes oval. *Apex*, blunt-pointed. *Base*, rounded or slightly pointed, and often somewhat unequal.

Leaf, four to seven inches long, two to four inches wide; smooth above, paler and downy beneath. *Teeth*, twelve to twenty-six, decreasing evenly and uniformly to the apex.

Bark of trunk, gray; furrowed up and down with continuous and often very deep furrows, with sharp ridges between.

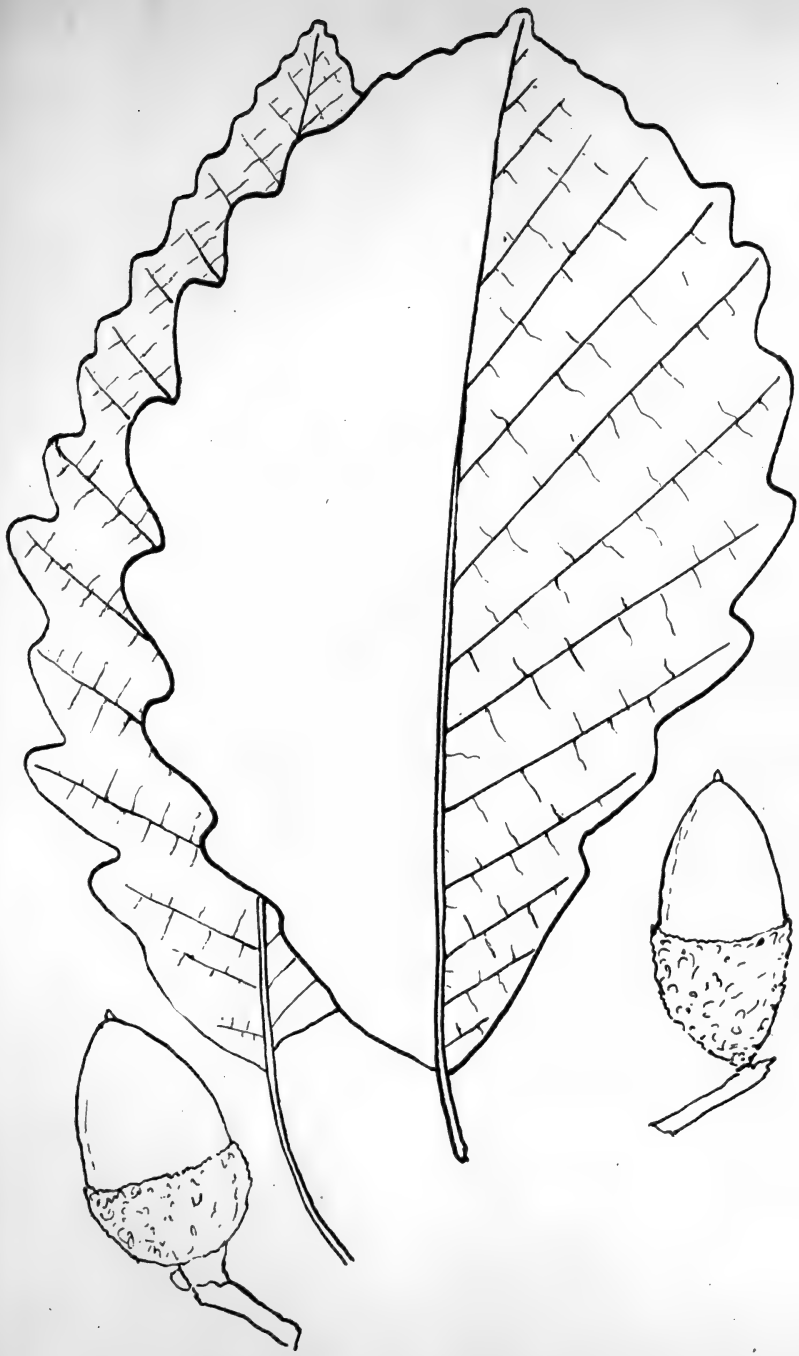


Fig. 57.—Chestnut Oak. (Q. prinus, L.)
NATURAL SIZE.

Acorns, usually in pairs on a stem about one half of an inch long, or often shorter. *Cup*, rounded or somewhat top-shaped, with minute scales, or warty. *Nut*, usually long egg-shape or long oval; one to one and one fourth inches long; brown; about one third covered by the cup; sweet. September, October.

Found, from Eastern Massachusetts to New York, southward to Delaware, along the Alleghany Mountains to Alabama and westward to Central Kentucky and Tennessee.

A tree forty to seventy feet in height, with strong, hard wood, largely used in fencing, for railroad ties, etc.; of less value than that of the White Oak. Its bark is very rich in tannin.

Fig. 58.—Yellow Chestnut Oak, Yellow Oak. *Q. Muhlenbèrgii, Engel. Q. castànea, Willd.*

Leaves, SIMPLE; ALTERNATE; EDGE EVENLY AND SHARPLY (or sometimes bluntly) TOOTHED.

Outline, very narrow oval (or sometimes wide). *Apex*, taper-pointed. *Base*, pointed or blunt.

Leaf-stem, three fourths to one inch long.

Leaf, usually about five to seven inches long, by one and one half to two inches wide, but sometimes so wide as to resemble the preceding species *(Q. prinus)*, from which, however, it is distinguished by its *thin bark*. Of all the "chestnut-oak" leaves it most closely resembles the chestnut leaf. It is smooth above, whitish and minutely downy beneath.

Bark of trunk, light, flaky, and thin.

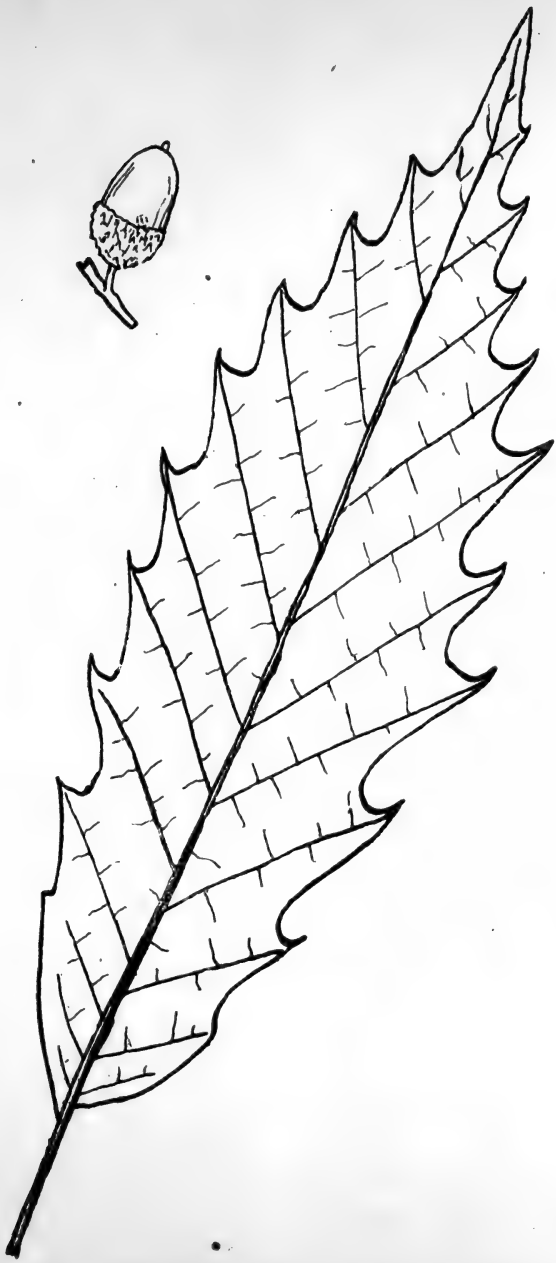


Fig. 58.—Yellow Chestnut Oak. Q. (Muhl.), Engel.
NATURAL SIZE.

Acorn, nearly stemless. *Cup*, about five twelfths to seven twelfths of an inch across; rounded; thin, with very small, closely pressed scales. *Nut*, seven twelfths to nine twelfths of an inch long; egg-shape or narrow oval, light brown, about one third covered by cup; sweet. October.

Found, from Massachusetts to Delaware, along the mountains to Northern Alabama and westward. Very common west of the Alleghany Mountains.

A tree forty to sixty feet high, with strong and durable wood.

Fig. 59.—Black Jack, Jack Oak, Barren Oak. *Q. nigra, L.*

Leaves, SIMPLE; ALTERNATE; EDGE SLIGHTLY LOBED AT THE UPPER PART (edge of the lobes entire).

Outline, abruptly widening above. *Base*, heart-shape or rounded. *Apex* of lobes, rounded or sometimes slightly pointed, and bristle-tipped, at least until old.

Leaf, three to four inches long (on vigorous shoots much longer); dark green, smooth, and shining above; below rusty and roughish, thick and tough; ribs distinct above. *Lobes*, three (sometimes five), very short, and above the middle of the leaf.

Bark of trunk, rough and blackish.

Acorn, nearly or quite stemless. *Cup*, top-shaped, coarsely scaly. *Nut*, one half to two thirds of an inch long; rounded egg-shape; darkish-brown when ripe; nearly one half covered by the cup. October.

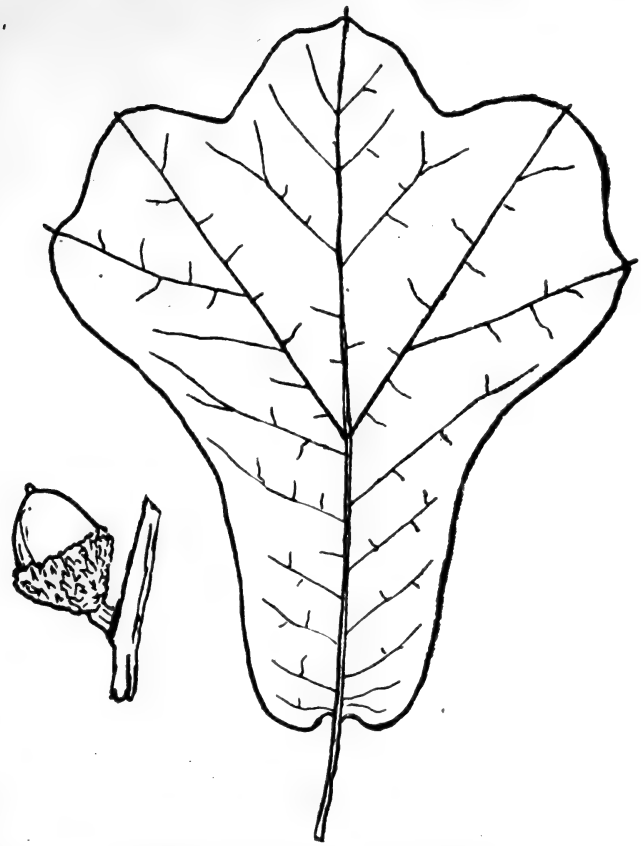


Fig. 59.—Black Jack. (Q. nigra, L.)
NATURAL SIZE.

Found, on Long Island, southward and westward. Very common through the Southern States.

A small tree, eight to twenty-five feet high; of slight value except for fuel.

Fig. 60.—Spanish Oak. *Q. cuneàta, Wang. Q. falcàta, Michx.*

Leaves, SIMPLE; ALTERNATE; EDGE LOBED (the edges of the lobes mostly entire, but often with one to three teeth toward the ends).

Outline, abruptly spreading above the middle. *Base*, rounded, sometimes slightly unequal. Ends of the lobes and of the few teeth, when present, sharp and bristle-tipped.

Leaf, about three to six inches long; dark, dull green, and rough above; below, grayish and downy. Lobes, usually three, sometimes four or five, mostly long and narrow, especially the end one.

Bark of trunk, blackish and deeply grooved.

Acorns, nearly stemless. *Cup*, shallow, somewhat top-shaped. *Nut*, about one third to one half inch long; rounded, sometimes slightly hollowed at the apex; bitter. October.

Found, in sandy soils and barrens, from Long Island southward; in the Northern States, only near the coast and rare.

A tree about twenty to thirty feet high in New Jersey; in the South, seventy to eighty feet; with wood of slight value except for fuel.

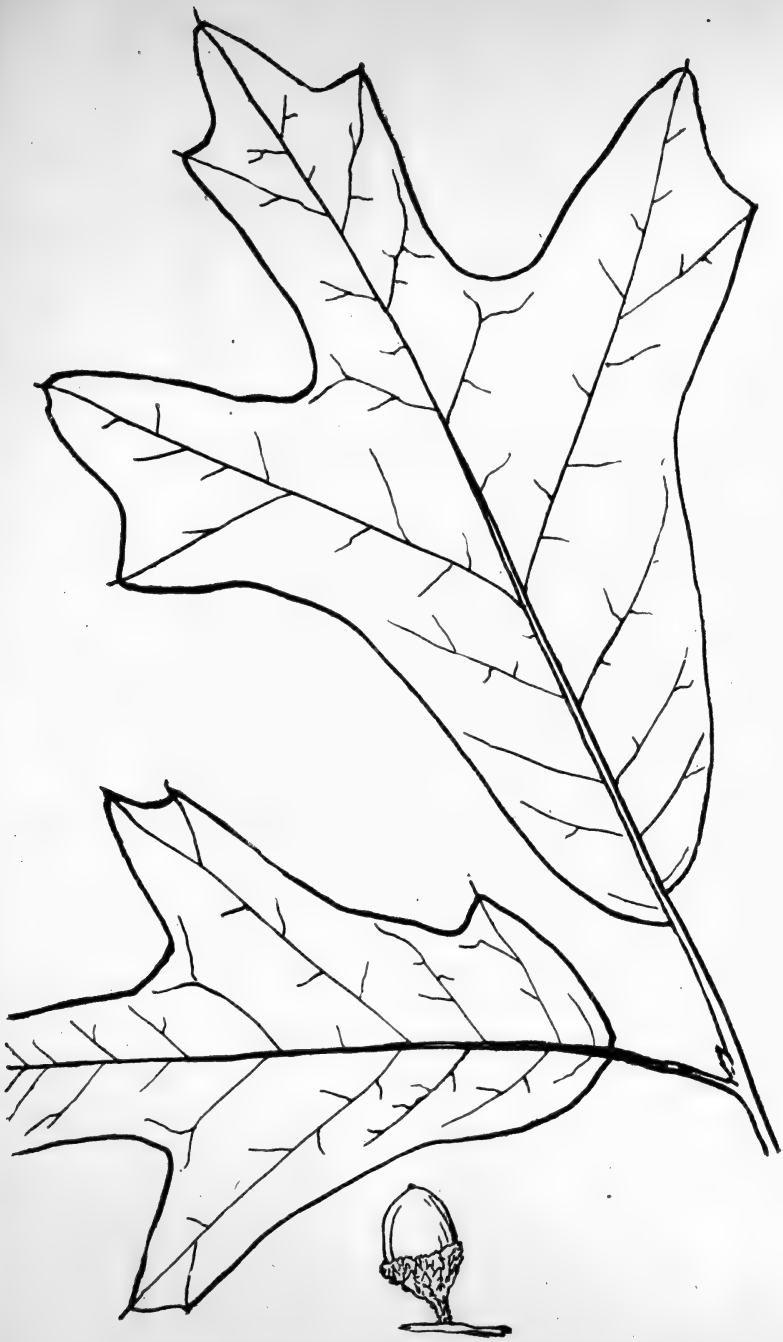


Fig. 60.—Spanish Oak. (Q. cuneàta, Wang.)
NATURAL SIZE.

Fig. 61.—Scarlet Oak. *Q. coccinea, Wang.*

Leaves, SIMPLE; ALTERNATE; EDGE DEEPLY LOBED (edges of lobes mostly entire, but notched and toothed towards the ends).

Outline, broadly oval or broadly reverse egg-shape. *Base*, very short wedge-shape or squared. Ends of the lobes and of the teeth pointed and bristle-tipped.

Leaf, four to eight inches long, bright green above, slightly lighter below; both surfaces smooth and shining. *Lobes*, five to nine, usually seven with the hollows rounded and very broad, and reaching about two thirds of the way to the middle rib. Most of the lobes widen and are deeply notched toward their end.

Bark of trunk, thick and rough, usually not quite as dark or as straight-furrowed as that of the Black Oak. The inner bark *reddish*.

Acorns, variable. *Cup*, very thick, top-shaped, with large, somewhat triangular egg-shaped, scales. *Nut*, one half to three fourths of an inch long; round or rounded egg-shape, about one third covered by the cup; kernel bitter and *whitish*. October.

Found, from Southern Maine southward and westward; most common in the Middle and Southern States.

A tree fifty to ninety feet high, with wood of less value than some of the other oaks. In the fall the leaves turn to a bright scarlet, or orange-scarlet, or crimson and red. They often cling throughout the winter.

Fig. 61.—Scarlet Oak. (Q. coccinea, Wang.)
NATURAL SIZE.

Fig. 62, *a* and *b*.—Black Oak, Yellow-Bark Oak, Quercitron, Yellow Oak. *Q. coccinea, var. tinctoria, Gray. Q. tinctoria, Bar.*

Leaves, SIMPLE; ALTERNATE; EDGE LOBED (edge of the lobes mostly entire, but oftenest with a few teeth toward the end).

Outline, reverse egg-shape or oval. *Base*, usually rounded. Ends of the lobes and of the few teeth, sharp and bristle-pointed, especially when young.

Leaf, five to eight inches long; three to five inches wide; very variable. The two types, *a* and *b*, are often found on the same tree; *b* is a variation toward the leaf of the Scarlet Oak. The upper surface is roughish, becoming smoother when mature; the under surface, rusty-downy until mid-summer, when the down mostly disappears, except from the angles of the ribs.

Bark of trunk, blackish and deeply and roughly furrowed, with an inner bark that is very thick and *yellow* and bitter.

Acorns, variable; usually small; on short stems. *Cup*, thick; somewhat top-shaped; scales distinct and rather large. *Nut*, one half to two thirds of an inch long; rounded; nearly one third covered by the cup. *Kernel*, bright yellow or orange and bitter. October.

Found, from Southern Maine southward and westward. Very common, especially in the Atlantic forests.

A tree fifty to a hundred feet high, with wood that is inferior to that of the White Oak. The yellow inner bark (quercitron of the shops) is a valuable dye, and is rich in tannin. Late in the autumn the leaves turn to a rich yellowish-brown or russet.

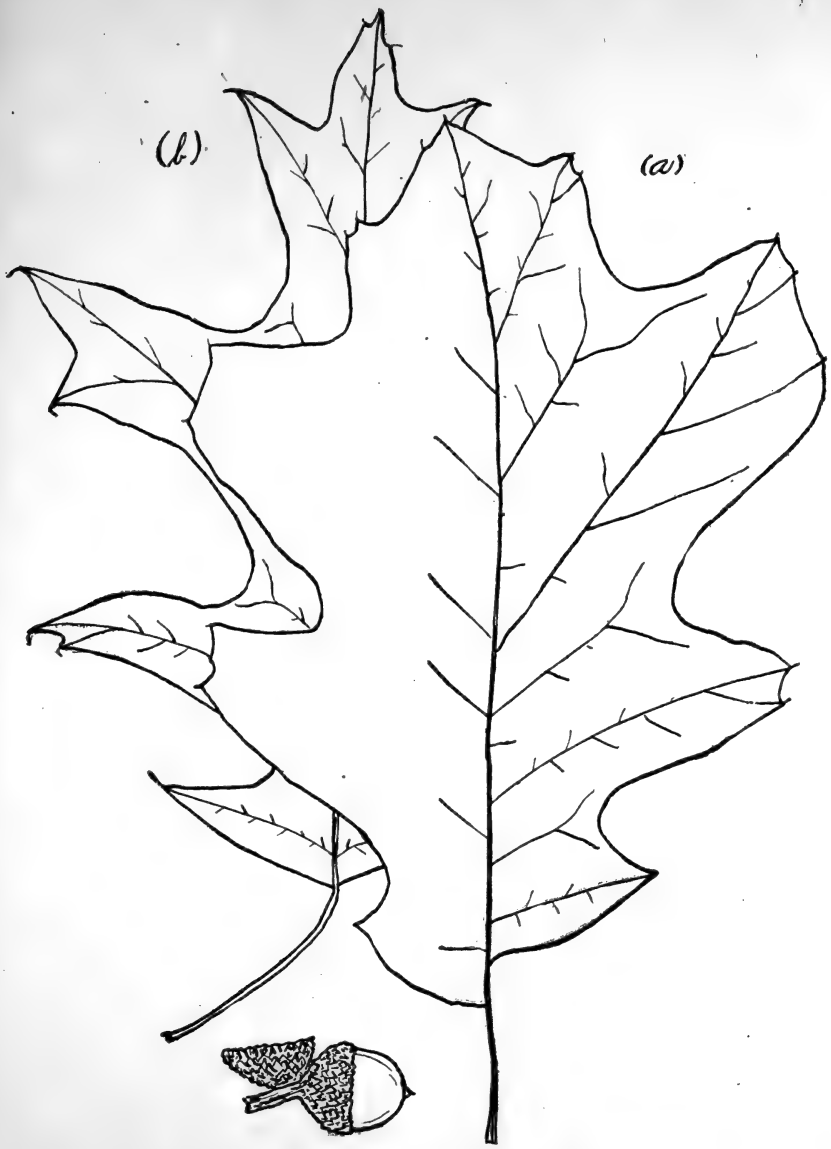


Fig. 62, *a* and *b*.—**Black Oak.** (Q. c., tinctòria, Gray.)
FRUIT AND LEAVES REDUCED ONE FOURTH.

It is very probable that the "Black Oak" and the "Scarlet Oak" ought to be considered as *one*, and described, not as species and variety, but as slightly different forms of the single species Q. coccinea. Though the most distinctive leaves of the "Black Oak" are easily recognized, often others are so nearly like those of the "Scarlet Oak" that it is not easy to distinguish between them; and the same is true of the fruit and the bark. Michaux f. says: "The only constant difference between the acorns of the Scarlet Oak and the Black Oak is in the kernel, which is white in the Scarlet Oak and yellow in the Black Oak."

The *Gray Oak* (Q. c., ambigua, Gray) is a variety sometimes found along the northeastern boundary of the States (as far as Lake Champlain) and northward. It combines the foliage of the Red Oak with the acorn of the Scarlet Oak.

Fig. 63.—Red Oak. *Q. rubra, L.*

Leaves, SIMPLE; ALTERNATE; EDGE LOBED (edges of the lobes mostly entire, but slightly toothed toward the ends).

Outline, about oval. *Base*, short wedge-shape, or rounded. Ends of the lobes and of their one to three slight teeth, pointed and bristle-tipped.

Leaf, six to nine inches long, three to five inches wide; both surfaces smooth. *Lobes*, nine to thirteen, usually very tapering from the base, with the hollows between them rounded and *narrow* and extending about half way to the middle rib.

Bark of trunk, dark, greenish-gray, and continuing smooth longer than on any other oak, never becoming as rough, for example, as that of the black oak.

Fig. 63.—Red Oak. (Q. rubra, L.)
NATURAL SIZE.

Acorns, large and stemless, or nearly so. *Cup*, flat saucer-shape, bulging, very shallow, nearly smooth, with small scales. *Nut*, about one inch long, somewhat egg-shape; bitter. October.

Found, from Nova Scotia and New Brunswick westward and southward. Very common, especially at the North, and extending farther north than any other Atlantic oak.

A tree fifty to eighty feet high, with wood that at the East is porous and not durable (though often of better quality westward). It is used for clapboards and in cooperage. The leaves change in the fall to dark red.

Fig. 64.—Pin Oak, Swamp Spanish Oak, Water Oak. *Q. palùstris, D. Roi.*

Leaves, SIMPLE; ALTERNATE; EDGE LOBED (edges of the lobes mostly entire, but notched and toothed towards the ends).

Outline, narrow oval or broad oval. *Base*, from long wedge-shape to squared. Ends of lobes and of the teeth pointed and bristle-tipped.

Leaf, three to five inches long; both sides bright green, smooth, and shining; downy in the angles of the ribs below. *Lobes*, seven to nine, usually seven, with the hollows between them broad and round and usually reaching about three fourths of the way or more to the middle rib. The wide type of leaf closely resembles the leaves of the scarlet oak, but it is *smaller* and usually the hollows reach nearer to the middle rib.

Bark, smoothish (comparatively), inner bark reddish.

Acorns, numerous, small, on short stems. *Cup*, top-shaped, shallow, and nearly smooth. *Nut*, rounded, one half inch long or less, sometimes broader than long, light brown. October.

Fig. 64.—Pin Oak. (Q. palùstris, D. Roi.)
NATURAL SIZE.

Found, from the valley of the Connecticut to Central New York, southward to Delaware and the District of Columbia; in Southern Wisconsin and southward; usually along streams and on low, wet land. Most common and reaching its finest growth west of the Alleghany Mountains.

A handsome tree forty to sixty feet high, usually with a pointed top and with light and delicate foliage. The wood is rather coarse and not durable. It takes its name of Pin Oak from the peg-like look of the dead twigs and short branches with which the lower parts of the tree are usually set.

Fig. 65.—Willow Oak, Peach-leaved Oak. *Q. Phellos, L.*

Leaves, SIMPLE; ALTERNATE; EDGE ENTIRE.

Outline, long and narrow. *Apex*, pointed and bristle-tipped. *Base*, pointed.

Leaf, three to four inches long (sometimes five); one half to seven eighths of an inch wide; rather thick and stiff; smooth and shining above; somewhat dull beneath; very young leaves, light green above and soft, whity-downy beneath.

Bark, thick and smoothish.

Acorns, small, nearly stemless. *Cup*, rather shallow, saucer-shaped, or somewhat rounded top-shape. *Nut*, about three eighths of an inch long, rounded, brown; kernel, bitter and bright orange. October.

Found, from Staten Island and New Jersey southward along the coast to Northeastern Florida and the Gulf States, and from Kentucky southwestward. Usually on the borders of swamps and in sandy woods.

A tree thirty to fifty feet high, with poor wood.

Fig. 65.—Willow Oak. (Q. Phellos, L.)
NATURAL SIZE.

Fig. 66.—Shingle Oak, Laurel Oak. *Q. imbricària, Michx.*

Leaves, SIMPLE; ALTERNATE; EDGE ENTIRE.

Outline, long and narrow. *Apex*, pointed and bristle-tipped. *Base*, pointed.

Leaf, three to six inches long; one to two inches wide; smooth and shining above; somewhat downy beneath; thick and stiff.

Bark, smooth and unbroken.

Acorns, small, nearly stemless. *Cup*, shallow. *Nuts*, rounded; about one half inch in diameter; bitter. October.

Found, in Lehigh County, Pennsylvania (Porter), westward to Southeastern Iowa, and southward. Most common west of the Alleghany Mountains.

A tree thirty to fifty feet high, with poor wood, that is used at the West for shingles and clapboards.

NOTE.—Of the nine hybrids that have been recognized, most are outside of our limits or entirely local. Mention need be made only of two:

Q. heterophylla, Michaux ("Bartram's Oak"). Staten Island and New Jersey to Delaware and North Carolina.

Q. Rudkìni, Britt. New Jersey.

THE OAK.

"Live thy Life,
Young and old,
Like yon oak,
Bright in spring,
Living gold;

Summer-rich
Then; and then
Autumn-changed,
Sober-hued
Gold again.

All his leaves
Fall'n at length,
Look, he stands,
Trunk and bough,
Naked strength."

ALFRED (LORD) TENNYSON, 1889.

NOTE.—See *Sassafras* (S. officinàle), under Section A, *I.*, page 18.
NOTE.—See *Buttonwood* (P. occidentàlis), under Section A, *II.*, page 53.

Fig. 66.—Shingle **Oak.** (Q. imbricària, Michx.)
NATURAL SIZE.

Genus LIQUIDÀMBER, L. (Sweet Gum.)

Fig. 67.—Sweet Gum, Bilsted. *L. styracìflua, L.*

Leaves, SIMPLE; ALTERNATE; EDGE DEEPLY LOBED (lobes finely and sharply toothed throughout).

Outline, rounded. The lobes are five to seven, radiating from the base. *Apex* of the lobes, pointed. *Base* of the leaf, heart-shape.

Leaf, three to seven inches in diameter, smooth and shining, with a pleasant odor when bruised. Ribs tufted at their angles.

Bark, gray; usually strongly winged with corky ridges along the branchlets. In the South, a spicy gum, from which the tree takes its name, oozes from the bark.

Fruit, small woody pods are collected into a round ball. These usually contain a few good seeds and a large number of others that resemble saw-dust. September.

Found, from Connecticut to Illinois, and southward. It reaches its finest growth and is very common in the bottom lands of the Mississippi basin.

A fine tree sixty to seventy feet high, or southward one hundred feet and more. The wood is valuable, and would be better appreciated except for the difficulty of seasoning it. It is sometimes used as a substitute for Black Walnut. Its gum is used medicinally.

NOTE 1.—See *Mulberry*, under A, *II.*, page 50.
NOTE 2.—See *Paper Mulberry*, under A, *II.*, page 52.
NOTE 3.—See *Silver Poplar*, with its genus, under A, *II.*, page 94.

Fig. 67.—Sweet Gum. (L. styraciflua, L.)
NATURAL SIZE.

TREES WITH SIMPLE LEAVES

CONTINUED

LEAVES OPPOSITE

(EDGE ENTIRE)

B I

Genus CORNUS, L. (Dogwood.)

From a Greek word meaning horn, because of the hardness of the wood.

Fig. 68.—Flowering Dogwood, Cornel. *C. florida, L.*

Leaves, SIMPLE; OPPOSITE; EDGE ENTIRE.

Outline, egg-shape, or often broad oval, or reverse egg-shape. *Apex*, pointed, often taper-pointed. *Base*, pointed and usually slightly unequal.

Leaf-stem, short (about one half inch).

Leaf, three to five inches long; smooth above; pale and nearly smooth beneath; with the whitish ribs very distinct and curved.

Bark of trunk, blackish and rough, with short, broken ridges. The bark, especially of the roots, is very bitter and is used as a tonic.

Flowers. The real flowers are greenish-yellow, in a small, rounded bunch; but this bunch is surrounded by four large, petal-like leaves, white and often tinged with pink, more than an inch in length, reverse egg-shaped, and ending in a hard, abruptly turned point. The appearance is of a single large flower. The tree blossoms in May before the leaves are fully set.

Fruit. The "flower" is succeeded by a bunch of oval berries that turn bright red as they ripen, making the tree in the autumn, with its richly changing foliage, nearly as attractive as in the spring.

Fig. 68.—Flowering Dogwood. (C. flòrida, L.)
NATURAL SIZE.

Found, in rich woods, from New England to Minnesota, and southward to Florida and Texas. It is very common, especially at the South.

A finely shaped, rather flat-branching tree, usually twelve to thirty feet high, but dwindling, northward, to the dimensions of a shrub; one of the most ornamental of all our native flowering trees. Its character throughout and the extent of its range would seem to warrant the recognition of its blossom as the "national flower."

Fig. 69. — Alternate-leaved Dogwood, Alternate-leaved Cornel. *C. alternifòlia, L. f.*

Leaves, SIMPLE; ALTERNATE (often crowded at the ends of the branches); EDGE ENTIRE.

Outline, broadly oval or egg-shape or reverse egg-shape. *Base*, slightly pointed. *Apex*, pointed.

Leaf-stem, one inch long or more.

Leaf, about three to four inches long, sometimes yellowish-green; smooth above; whitish beneath, and slightly rough between the prominent curved ribs, seldom entirely flat, usually in clusters at the ends of the branches.

Bark of the branches, smooth, yellowish-green, with whitish streaks.

Flowers, yellowish in loose flat clusters. June.

Fruit, very dark blue when ripe, on reddish stems. August.

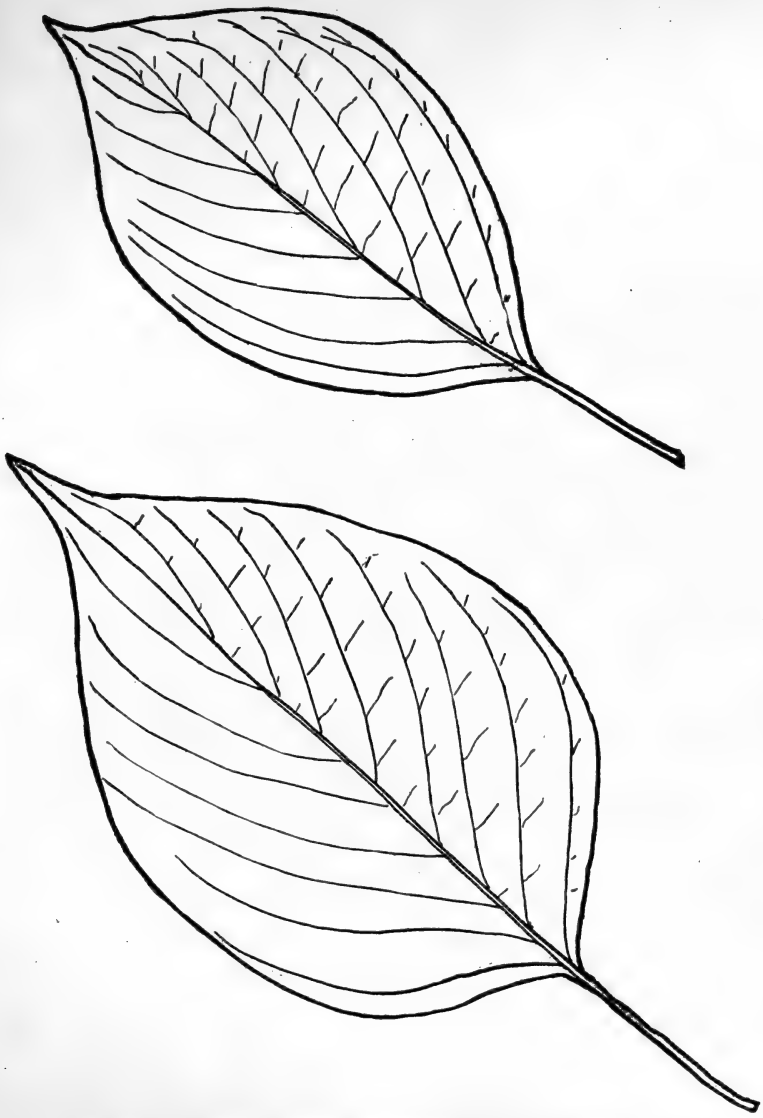


Fig. 69.—Alternate-leaved Dogwood. (C. alternifòlia, L. f.)
NATURAL SIZE.

Found, in low rich woods and along streams, from New Brunswick through the Northern States, and southward along the Alleghany Mountains to Northern Georgia and Alabama.

A small tree or shrub, ten to twenty feet high, with wide-spreading branches and flattish top. A "Shaker Medicine" is made from its bitter bark.

Genus CHIONÀNTHUS, L. (Fringe Tree.)

From two Greek words meaning "snow" and "flowers."

Fig. 70.—Fringe Tree. *C. Virgìnica, L.*

Leaves, SIMPLE; OPPOSITE; EDGE ENTIRE.

Outline, oval, long oval, or reverse egg-shape. *Apex*, pointed (or sometimes rounded). *Base*, pointed.

Leaf, smooth.

Flowers, with narrow petals nearly an inch in length, snow-white, in long, loose, and drooping clusters. June.

Fruit, one half to two thirds of an inch long, oval, purplish, with one stony seed.

Found, along the banks of streams from New Jersey and Southern Pennsylvania southward. Common and very ornamental in cultivation.

A small tree eight to twenty-five feet high, or often a shrub.

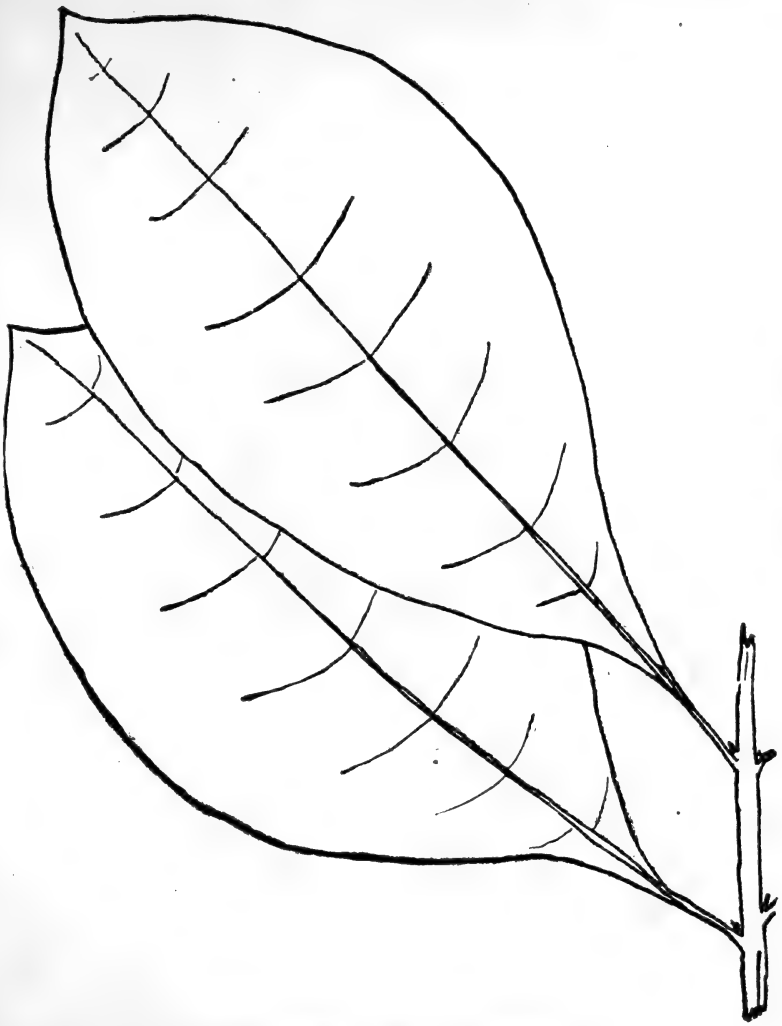


Fig. 70.—Fringe Tree. (C. Virginica, L.)
NATURAL SIZE.

Genus CATALPA, Scop., Walt. (Catalpa.)

Probably a corruption of the Indian word Catawba, which was the name of an important tribe that occupied a large part of Georgia and the Carolinas.

Fig. 71.—Catalpa, Catawba, Indian Bean. *C. bignonoides, Walt.*

Leaves, SIMPLE; OPPOSITE; EDGE ENTIRE.

Outline, broad egg-shape or heart-shape. *Apex*, pointed. *Base*, heart-shape.

Leaf, five to eight inches wide; smooth above, downy below, especially on the ribs.

Bark of trunk, a silver-gray, only slightly furrowed.

Flowers, very showy and fragrant, in large, upright pyramid-shaped clusters; white or violet-tinged, spotted inside with yellow and purple. July.

Fruit, in long, rounded pods (six to twelve inches long, about half an inch in diameter), with the seeds winged and fringed. They often remain throughout the winter. October.

Found, now very widely naturalized throughout the Middle and Southern Atlantic States, though formerly a rare and local Southern tree.

A low, very ornamental tree, usually twenty to thirty feet high. Its seeds and bark are considered medicinal.

Another species, *C. speciosa, Ward*, larger and of more value, is sometimes met with in Southern Illinois and the adjoining States.

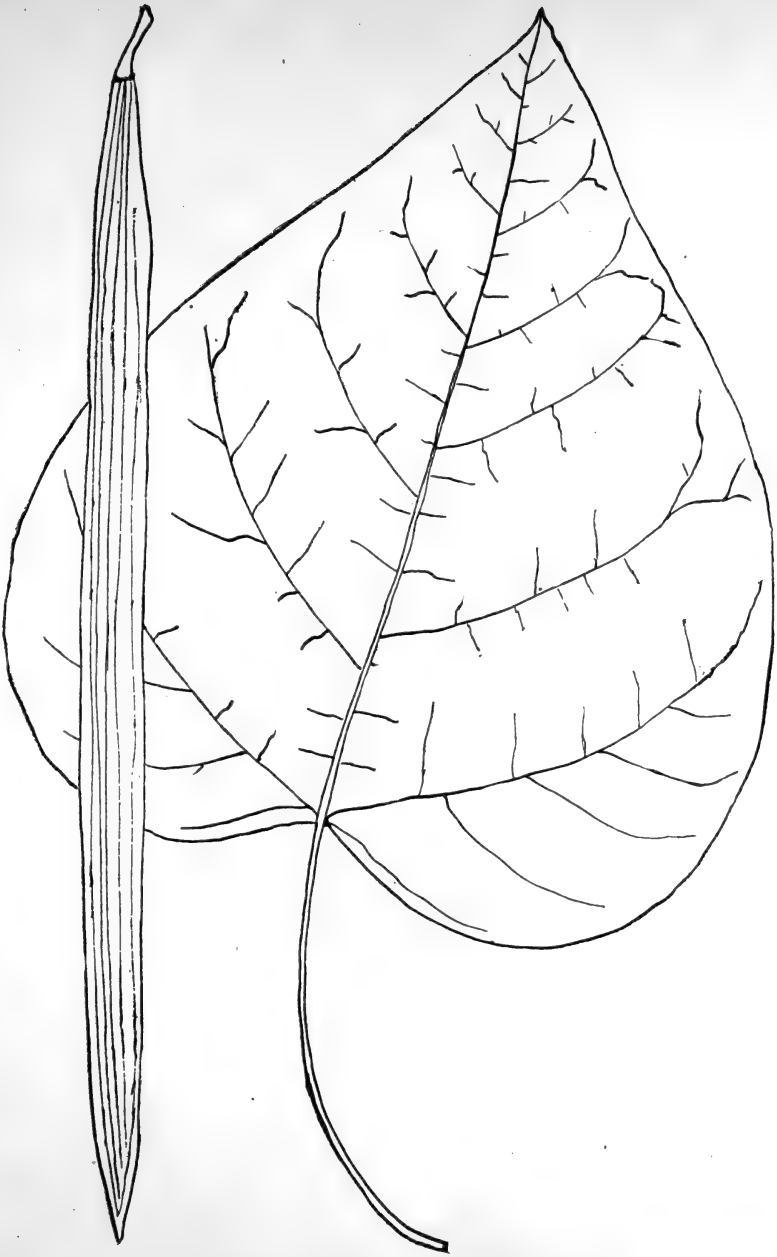


Fig. 71.—Catalpa. (C. bignonoides, Walt.)
LEAF AND FRUIT REDUCED ONE THIRD.

TREES WITH SIMPLE LEAVES

LEAVES OPPOSITE

CONTINUED

(EDGE TOOTHED)

B II

Genus VIBÙRNUM, L. (Haw and Viburnum.)

Fig. 72.—Black Haw, Stag Bush. *V. prunifòlium, L.*

Leaves, SIMPLE; OPPOSITE; FINELY AND SHARPLY TOOTHED.

Outline, broadly oval, or broadly reverse egg-shape. *Apex*, rounded, sometimes pointed. *Base*, rounded, sometimes slightly pointed. Quite variable.

Leaf-stem, short and smooth. the edges slightly winged, the *wings straight.*

Leaf, about one and a half to two inches long; smooth; shining above.

Flowers, white, in rather large and flat, stemless bunches at the ends of the branches. May.

Berries, oval, blackish, sweet and edible.

Found, in Connecticut and Southern New York to Michigan and southward.

A small tree fifteen to twenty feet high, or oftenest at the North a low, much-branching shrub. Usually with some of its branches stunted and bare.

The tonic bark is sometimes used medicinally.

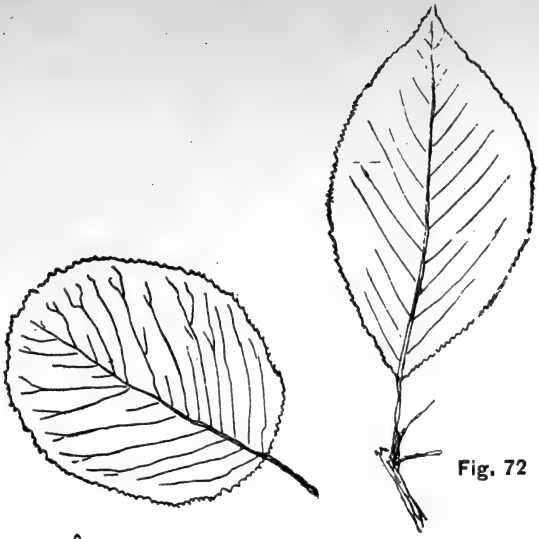


Fig. 72

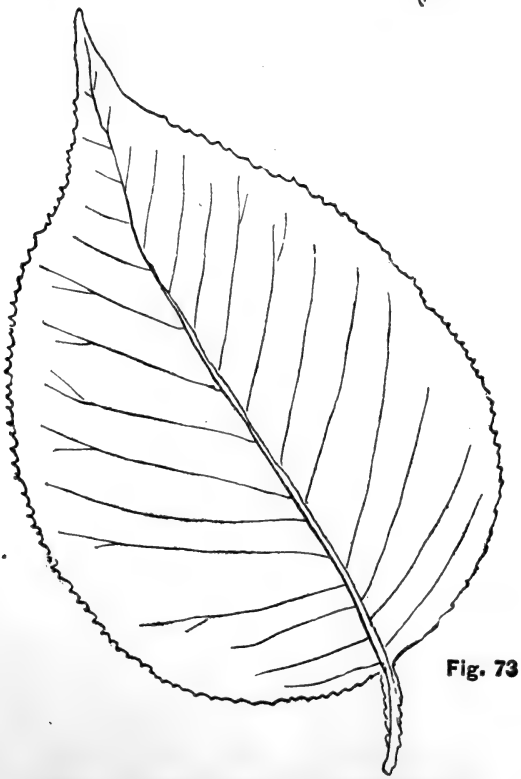


Fig. 73

Fig. 72.—Black Haw. (V. prunifòlium, L.)
Fig. 73.—Sweet Vibûrnum. (V. lentàgo, L.)
NATURAL SIZE.

Fig. 73.—Sweet Vibûrnum, Sheep Berry, Nanny Berry.
V. lentàgo, L.

Leaves, SIMPLE; OPPOSITE; EDGE CLOSELY AND SHARPLY TOOTHED.

Outline, egg-shape. *Apex*, pointed. *Base*, round. Quite variable.

Leaf-stem, *winged* on both sides with a *wavy border*; when young, sprinkled with brownish glands.

Leaf, about three to four inches long, and half as wide or more; smooth.

Flowers, white, in flat, stemless clusters. May, June.

Fruit, one half inch long; oval; sweetish; red, becoming almost black when ripe; edible.

Found, from Hudson's Bay through the Northern States, southward to Georgia. Common in swamps and rich, moist soil.

A tree fifteen to twenty feet high, with hard, ill-smelling wood.

TREES WITH SIMPLE LEAVES

LEAVES OPPOSITE

CONTINUED

(EDGE LOBED)

B III

Genus ACER, L. (Maple.)

From a Latin word meaning sharp, because of the ancient use of the wood for spear-heads and other weapons.

Fig. 74.—Striped Maple, Moosewood, Whistlewood, Goose-foot Maple. *A. Pennsylvànicum. L.*

Leaves, SIMPLE; OPPOSITE; EDGE LOBED, with the lobes very finely and sharply toothed.

Outline, rounded in the lower half, three-lobed above with the hollows between the lobes sharp. *Apex* of the lobes, slim and pointed. *Base*, more or less heart-shape.

Bark, smooth, green, and peculiarly marked lengthwise with dark stripes.

Flowers, large, yellowish-green. May, June.

Fruit, with spreading pale-green wings, in long clusters.

Found, in Canada, through the Northern Atlantic States, westward to Northeastern Minnesota, and along the Alleghany Mountains to Georgia.

A small and slender tree or shrub, usually ten to twenty-five feet high.

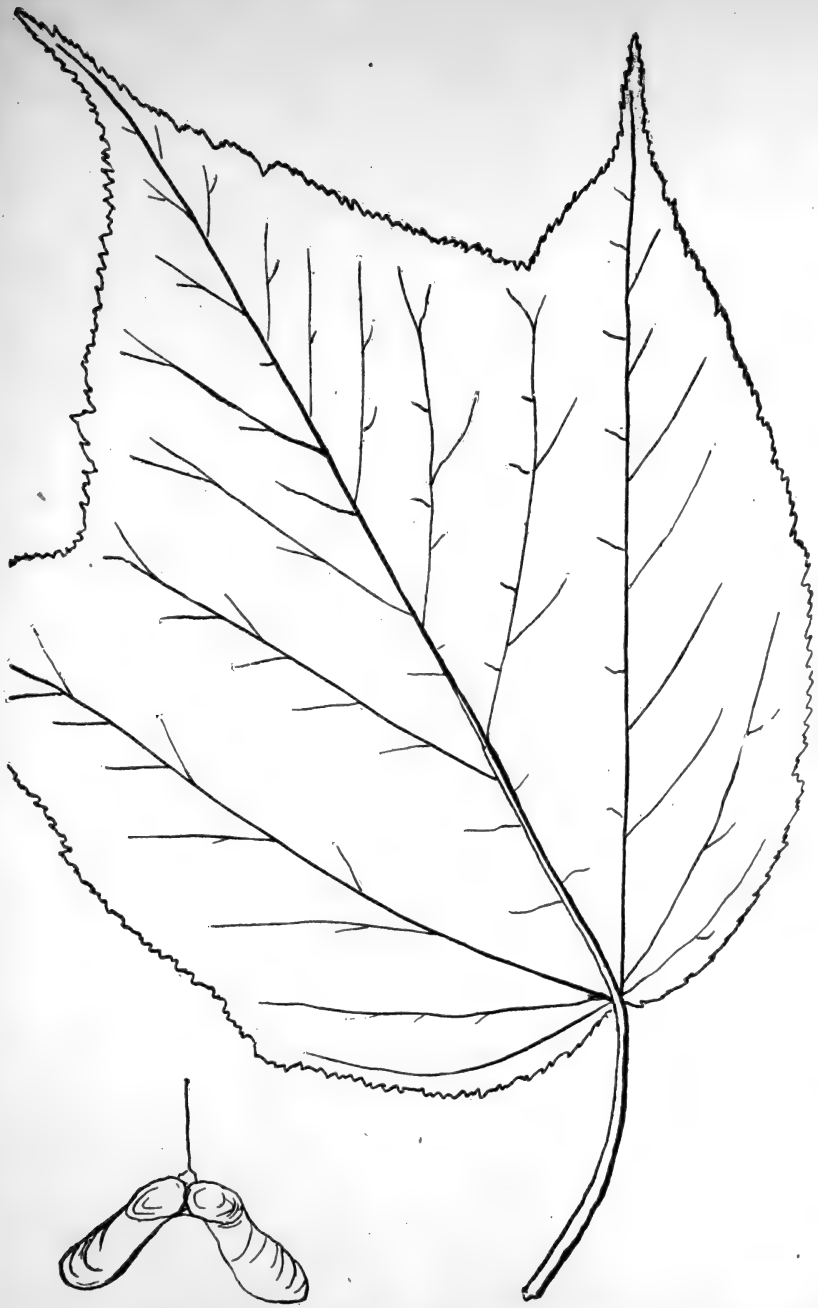


Fig. 74.—Striped Maple. (A. Pennsylvànicum, L.)

NATURAL SIZE.

Fig. 75.—Sugar Maple, Hard Maple, Rock Maple. *A. sàccharum, Marsh. A. saccharìnum, Wang.*

Leaves, SIMPLE; OPPOSITE; EDGE LOBED, with the lobes very sparingly and coarsely sharp-toothed or the lower pair entire.

Outline, rounded, with three to five lobes, usually five, with the hollows between the lobes and between the coarse teeth *rounded*. *Apex* of the lobes, pointed. *Base*, heart-shaped or nearly squared.

Leaf, dark green above; slightly lighter beneath; smooth or somewhat downy on the ribs; closely resembling that of the introduced "Norway Maple" but lacking the latter's milky-juiced leaf-stem.

Bark, light gray, usually smoothish when young, becoming rough and scaly.

Flowers, yellowish-green and very abundant. April, May.

Fruit, greenish-yellow, smooth, drooping, on thread-like and hairy stems one to two inches long, with wings about one inch long, broad and slightly spreading. September.

Found, from Southern Canada through the Northern States, southward along the Alleghany Mountains, and westward to Minnesota, Eastern Nebraska, and Eastern Texas. Its finest development is in the region of the Great Lakes. It grows in rich woods; often it forms "groves," sometimes extensive forests.

A tree fifty to eighty feet high or more; of very great value in many directions,—as a shade-tree, for fuel, for

Fig. 75.—Sugar Maple. (A. sàccharum, Marsh.)
NATURAL SIZE.

interior finish and the making of furniture, for its ashes, which give large quantities of potash; especially for its sap, which yields the "maple sugar" of commerce.

Accidental variations furnish the handsome *Bird's-eye Maple* and *Curled Maple.*

The yield of sugar by an average tree in one season is from five to ten pounds.

Fig. 76.—Black Maple. *A. s., var. nigrum, T. and G.*

This variety is distinguished from its species (*i. e.*, from the Sugar Maple) by the shape of its leaf, which, however, is somewhat variable, and also by the following items:

Bark, blackish.

Base of the leaf, when heart-shaped, sometimes with overlapping lobes.

Seed-wings, set wide apart, but only slightly diverging.

Found, chiefly along streams and in river bottoms, from Western Vermont to Missouri and Northern Alabama.

Fig. 77.—Silver Maple, White Maple, Soft Maple. *A. saccharìnum, L. A. dasycàrpum, Ehr.*

Leaves, SIMPLE; OPPOSITE; EDGE DEEPLY LOBED, with the lobes unequally notched and toothed.

Outline, rounded, with five lobes (the lowest pair much the smallest), and with the hollows between the lobes *pointed* and usually extending half way to the base of

Fig. 76.—Black Maple. (A. s., var. nigrum.)
NATURAL SIZE.

the leaf. *Apex* of lobes, pointed. *Base*, heart-shaped or nearly squared.

Leaf, silvery white beneath; downy when young, becoming smooth.

Flowers, small, pale, yellowish-green; in crowded clusters. March, April.

Fruit, yellowish-green; woolly when young, becoming nearly smooth; on stems about one inch long, with very large, wide-spreading wings (two to three inches long), one of which is *often undeveloped.* July, August.

Found, widely distributed, but most common west of the Alleghany Mountains and southward.

A tree thirty to fifty feet high, with soft, white wood of comparatively slight value.

Fig. 78.—Red Maple, Swamp Maple, Soft Maple. *A. rubrum, L.*

Leaves, SIMPLE; OPPOSITE; EDGE LOBED, with the lobes irregularly sharp-toothed and notched.

Outline, roundish, with three to five lobes (the lowest pair, if present, the smallest); and with the hollows between the lobes pointed and usually extending *less than half-way* to the base of the leaf. *Apex* of the lobes, pointed. *Base*, heart-shaped (or sometimes rounded.

Leaf-stem, long and round.

Leaf (very variable in size and in the toothing and shape of its lobes); usually about two to four inches wide, with short lobes; whitish beneath.

Fig. 77.—Silver-Leaf Maple. (A. saccharinum, L.)
NATURAL SIZE.

Bark, smoothish; gray, becoming dark and rough with age.

Flowers, rich crimson, on short stems in drooping clusters. March, April.

Fruit, bright red, smooth, with stems two to three inches long. The wings are about one inch long. At first they approach each other, but afterward are somewhat spreading. September.

Found, widely distributed in swamps and along streams, especially in all wet forests eastward from the Mississippi to the Atlantic, and from Southern Canada to Florida and Texas.

A tree thirty to sixty feet high, with wood of considerable value, especially when it shows a "curly grain." It is one of the very earliest trees to blossom in the spring, and to show its autumn coloring in the fall.

Besides the above native Maples, modified and introduced forms are often met with in cultivation. Among them are the *Silver-striped Maple*, the *Cut-leaved Maple* (with the lobes extending nearly from the base of the leaf); the *Norway Maple* [A. platanoides, L.] (with a leaf resembling those of the Sugar Maple, but distinguished from them by the milky juice of its leaf-stem, and with large and very broadly flaring seed-wings); the *False Sycamore* [A. pseudo-plàtanus] (with its leaf resembling that of the Norway Maple in general shape, but having its lobes much more closely and more finely toothed, and with its large winged seeds short stemmed and arranged in long, drooping clusters); and, less frequently, the *Japanese Maple*.

Fig. 78.—Red Maple. (A. rubrum, L.)

NATURAL SIZE.

TREES WITH SIMPLE LEAVES

CONTINUED

LEAVES INDETERMINATE

C I

GUIDE FOR THE CONE-BEARING TREES.

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CONE-BEARING TREES.

Genus PINUS, L. (Pine.)

From a Celtic word meaning rock or mountain.

Fig. 79.—Gray Pine, Northern Scrub Pine, Prince's Pine.
P. Banksiàna, Lam.

Leaves, SIMPLE; INDETERMINATE in position because of their closeness, but arranged along the branches in *two-leaved*, sheathed bunches.

Leaf, needle-shape, about one inch long, pointed, stiff, curved, rounded on the back, grooved above.

Cones, nearly two inches long, gray, usually in pairs, and curved like small horns, with a peculiar habit of always pointing in the same direction as the branches. *Scales*, blunt, smooth, not armed with points or knobs.

Found, along the northern frontier of the United States and far northward. Its best growth is north of Lake Superior.

A small evergreen tree, or often a shrub, five to thirty feet high, with long, spreading branches, and light, soft wood that is of but slight value.

Fig. 80.—Jersey Pine, Scrub Pine. *P. Virginiàna, Mill. P inops, Ait.*

Leaves, SIMPLE; INDETERMINATE in position because of their closeness, but arranged along the branches in *two-leaved* sheathed bunches.

Leaf, needle-shape, one and three fourths to two and three fourths inches long, stiff, bluntish; on the outer side smooth and rounded; on the inner side flat, and rough downwards.

Cones, one and three fourths to three inches long, usually single and pointing downward. *Scales*, tipped with a stiff, straight prickle.

Bark of the trunk, rough and blackish. Young branches *smooth* (in other pines scaly). *Twigs*, purplish.

Found, from Long Island along the coast to South Carolina, and through Eastern and Middle Kentucky to Southeastern Indiana; in sandy and generally barren soil.

An evergreen tree fifteen to forty feet high, irregular in shape and with straggling, spreading, or drooping branches. The timber is very "pitchy," soft, and durable, but poor even for fuel.

"Next to the Gray Pine, the Jersey Pine is the most uninteresting species of the United States."—MICHAUX, f.

Fig. 81.—Table Mountain Pine, Hickory Pine. *P. pungens, Michx.*

Leaves, SIMPLE; INDETERMINATE in position because of their closeness, but arranged along the branches in *two-leaved* sheathed bunches.

Fig. 79

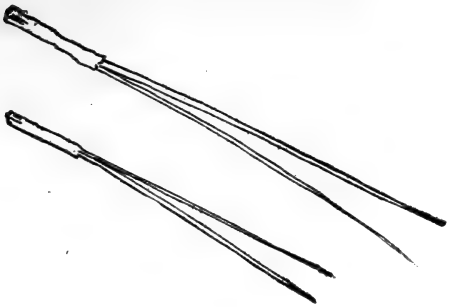


Fig. 80

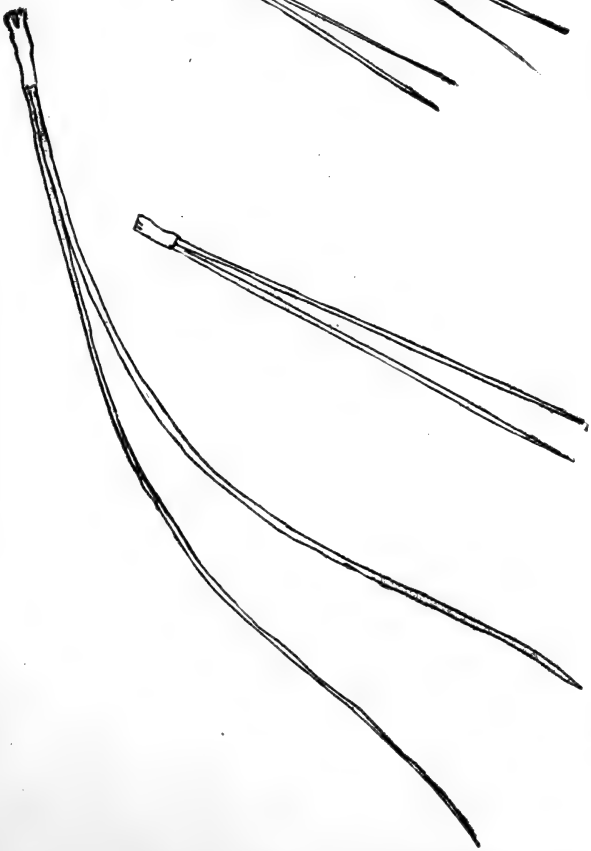


Fig. 81

Fig. 82

Fig. 79.—Gray Pine. (P. Banksiàna, Lam.)
Fig. 80.—Scrub Pine. (P. Virginiàna, Mill.)
Fig. 81.—Table Mountain Pine. (P. pungens, Michx.)
Fig. 82.—Red Pine. (P. resinòsa. Ait.)

NATURAL SIZE.

Leaf, needle-shape, about two and one half inches long, stiff; outer side smooth and rounded; inner side hollowed.

Cones, about three and one half inches long, of a light yellow color, stemless, often united in clusters of fours. *Scales*, with a stout spine, widening at its base, one sixth of an inch in length.

Found, within narrower limits than any other American Pine; along the Alleghany Mountains from Pennsylvania to Tennessee, especially upon Table Mountain in North Carolina, one of the highest peaks of the range.

A tree ten to fifty feet high, with light and soft wood, largely used for charcoal.

Fig. 82.—Red Pine, Norway Pine. *P. resinòsa, Ait. P. rubra, Michx, f.*

Leaves, SIMPLE; INDETERMINATE in position because of their closeness, but arranged along the branches in *two-leaved* sheathed bunches.

Leaf, needle-shape, five to eight inches long; dark, dull, green; rounded and smooth on the outside; on the inside hollowed.

Cones, about two to three inches long; rounded at the base; sometimes crowded in large clusters. *Scales*, not armed with points or knobs.

Bark of the trunk, comparatively smooth and reddish, of a clearer red than that of any other species in the United States.

Found, in dry and sandy soil from Newfoundland and the northern shores of the Gulf of St. Lawrence to the Winnipeg River, through the Northern States to Massachusetts, in the mountains of Northern Pennsylvania. Rare in the Eastern States, except in the extreme northern parts of New England.

An evergreen tree fifty to eighty feet high, or more, with hard and durable wood, useful for all kinds of construction. It is low-branching and regular in shape.

In a note given in confirmation of his estimate of the height of the red pine, Michaux says that when the French in Quebec built the war-ship *St. Lawrence*, fifty guns, they made its main-mast of this pine.

Fig. 83.—Yellow Pine, Short-leaved Pine, Spruce Pine. *P. ecpinàta, Mill. P. mitis, Michx.*

Leaves, SIMPLE; INDETERMINATE in position because of their closeness, but arranged along the branches in *two-leaved* sheathed bunches. (On vigorous young shoots the leaves are sometimes clustered in threes, not on the old branches.)

Leaf, needle-shape, two and a half to five inches long, usually four to five inches; dark green; slender; rounded on the outer side; on the inner side, hollowed.

Cone, about two to three inches long, in old trees scarcely more than one and a half inches long; the smallest of the American Pine cones; surface roughened by the slightly projecting ends of the scales; not growing in large clusters. *Scales*, tipped with a weak prickle pointing outward.

Found, in Staten Island and New Jersey, and southward to Western Florida; through the Gulf States, Arkansas, and parts of Kansas, Missouri, and Illinois.

An evergreen tree forty to eighty feet high, with *straight trunk*, *regular branches*, and *pyramid-shaped* head. The timber is hard and very valuable, second in value (among the Yellow Pines) only to the "Georgia Pine" (P. palustris—"Long-leaved Pine," "Southern Pine").

Fig. 84.—Pitch Pine. *P. rigida, Mill.*

Leaves, SIMPLE; INDETERMINATE in position because of their closeness, but arranged along the branches in *three-leaved* sheathed bunches.

Leaf, needle-shaped, three to six inches long; stiff and sharp; the outer side flattish; the inner side slightly ridged, and rough downwards.

Bark, very thick and rough, and deeply fissured; dark, often with a reddish or purplish tinge.

Cones, two to three inches long, oftenest in clusters of two to four. *Scales*, tipped with stiff and sometimes curved prickles.

Found, from New Brunswick to Lake Ontario, through the Atlantic States to Northern Georgia, and extending to the western slope of the Alleghany Mountains, in West Virginia and Kentucky. Usually in dry, sandy soil, sometimes in deep swamps. Very common.

An evergreen tree thirty to eighty feet high, with very irregular branches, and a trunk that is seldom straight to the top. The wood is hard and full of pitch, of slight value except for fuel and charcoal and coarse lumber.

Fig. 83

Fig. 84

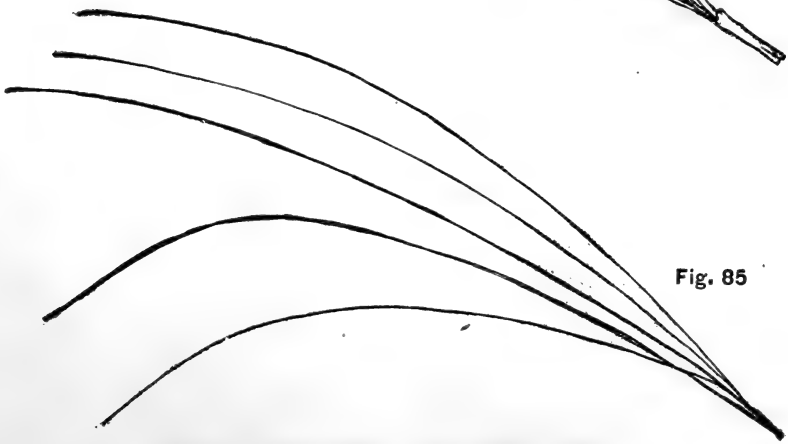


Fig. 85

Fig. 83.—Yellow Pine. (P. ecpinàta, Mill.)
Fig. 84.—Pitch Pine. (P. rigida, Mill.)
Fig. 85.—White Pine. (P. Strobus, L.)

NATURAL SIZE

Fig. 85.—White Pine, Weymouth Pine. *P. Strobus, L.*

Leaves, SIMPLE; INDETERMINATE in position because of their closeness, but arranged along the branches in *five-leaved* bunches, with their *sheaths lacking* or very short, excepting when young.

Leaf, needle-shape, three to five inches long, light bluish-green, three-sided, soft, and very slender.

Cones, four to six inches long, cylinder-shape, about one inch in diameter before the scales loosen; solitary, drooping, slightly curved. *Scales*, thin, without prickles.

Bark of trunk, *lighter* than in the other pines; in young trees *smooth*, and only slightly rough when older.

Found, from Newfoundland to the Winnipeg River, southward through the Northern States, and along the Alleghany Mountains to Georgia. Its finest growth is in the region of the Great Lakes.

An evergreen tree of soft and delicate foliage, eighty to one hundred and fifty feet high; one of the most valuable timber trees of any country. The wood is clear of knots, straight-grained, and soft, and is used in immense quantities for building and in many kinds of manufacturing. The branches are given off in flat, regular whorls around the straight trunk.

Genus PÌCEA, Link. (Spruce.)

Fig. 86.—Black Spruce. *P. Mariàna (Mill) B. S. P. P. nigra, Link.*

Leaves, SIMPLE; INDETERMINATE in position because of their closeness; arranged singly and thickly all around the branchlets.

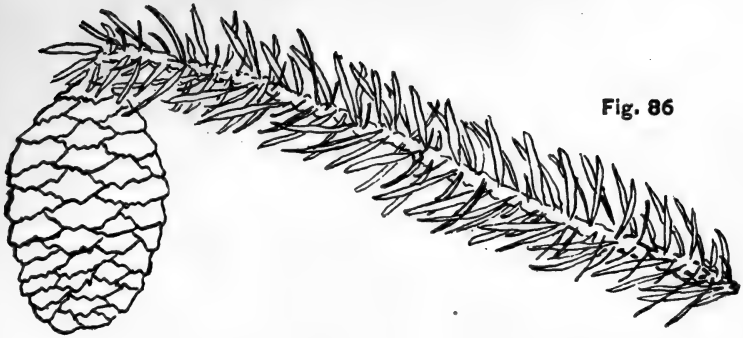


Fig. 86

Fig. 87

Fig. 86.—Black Spruce. P. Mariàna (Mill), B. S. P.
Fig. 87.—White Spruce. P. Canadènsis (Mill), B. S. P.
NATURAL SIZE.

Leaf, needle-shape, five twelfths to two thirds of an inch long, four-sided, mostly straight, stiff, and sharp; dark green.

Cones, three fourths to one and one half inches long, drooping at the ends of the branchlets; broad oval; *dark purple* when young, becoming *reddish-brown* as they ripen. *Scales*, long reverse egg-shape, thin, with a *wavy or toothed edge* toward their apex.

Found, along the Alleghany Mountains from the high peaks of North Carolina to Pennsylvania, through the Northern States, and far northward. In the North it often forms large, dark forests.

An evergreen tree thirty to sixty feet high, with straight, tapering trunk. The wood is light and straight-grained and is used for lumber, for the masts and spars of ships, in building, etc. From its twigs is prepared the "essence of spruce."

Fig. 87. — White Spruce. *P. Canadensis (Mill), B. S. P. P. alba, Link.*

Leaves, SIMPLE; INDETERMINATE in position because of their closeness; arranged singly all around the branchlets.

Leaf, needle-shaped, five twelfths to three fourths of an inch long, four-sided, curved, sharp, rather slender, bluish-green, much lighter than the leaf of the Black Spruce.

Bark, lighter than that of the Black Spruce.

Cones, one to two inches long, and always in the proportion of about two inches in length to one half

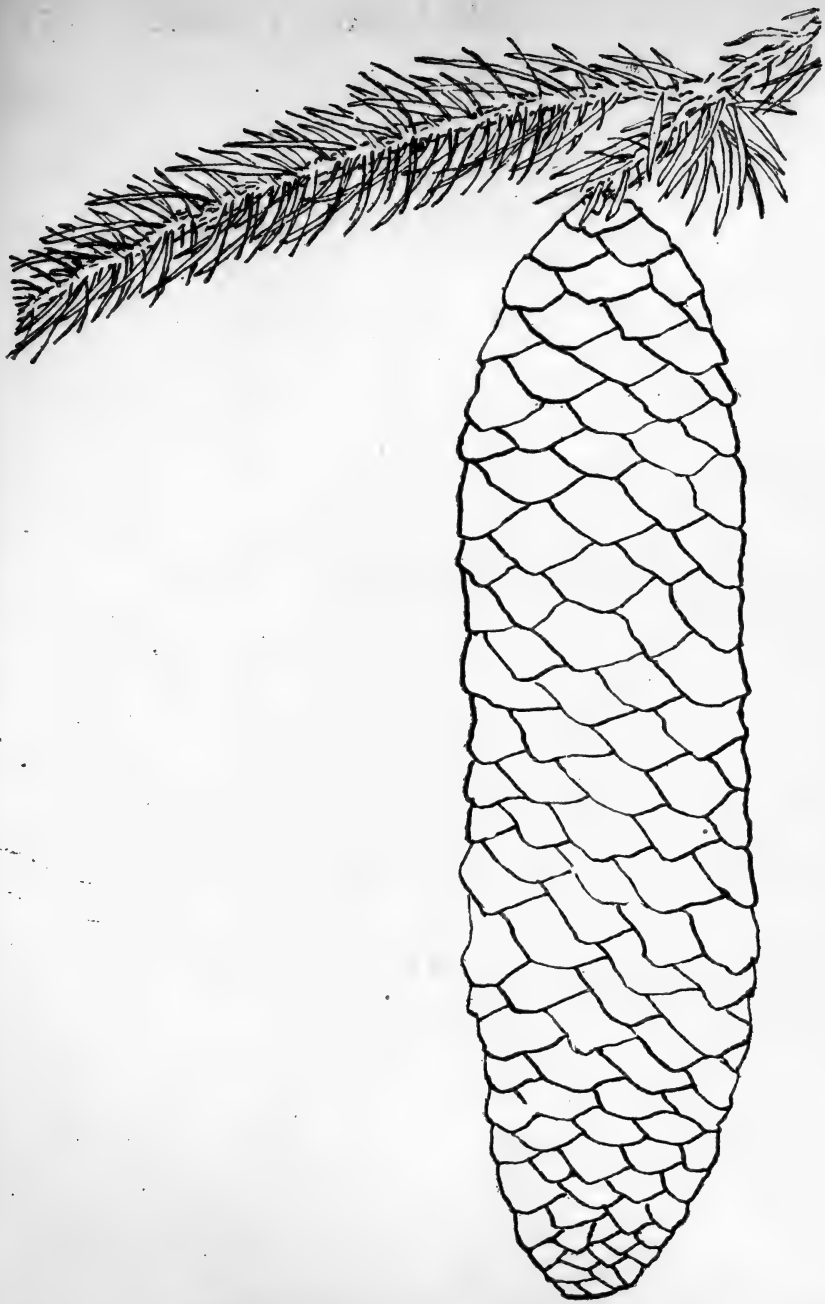


Fig. 88.—Norway Spruce. [P. excèlsa.]
NATURAL SIZE.

or three fourths of an inch in thickness; drooping at the ends of the branchlets; *long oval* or cylinder-shape; *pale green* when young, becoming *brownish* as they ripen. *Scales*, broad reverse egg-shape, with an *entire edge*, and rounded or somewhat two-lobed at the apex.

Found, in Maine, Northeastern Vermont, Northern Michigan, Minnesota, and far northward, on low ground and in swamps. It is most common north of the United States boundaries.

An evergreen tree, forty to seventy feet high. One of the most important of the Northern timber trees.

Fig. 88.—Norway Spruce. [*P. excèlsa.*]

This spruce is not a native, but is now very widely cultivated, and is sometimes found escaped from cultivation. It is a finer and larger tree than the native spruces, and differs from them especially in these items:

Cones, five inches and *more* in length; about one and a half inches in thickness.

Branches and branchlets, heavily drooping, especially in the older trees.

Genus TSUGA, Carr. (Hemlock.)

Fig. 89.—Hemlock. *T. Canadènsis (L.), Carr. Abies Canadènsis, Michx.*

Leaves, SIMPLE; INDETERMINATE in position because of their closeness; arranged singly in *two flat distinctly opposite ranks* up and down the branchlets.

Leaf, one half inch long, narrow; blunt; sometimes minutely toothed toward the apex; flat; green above; silvery white beneath.

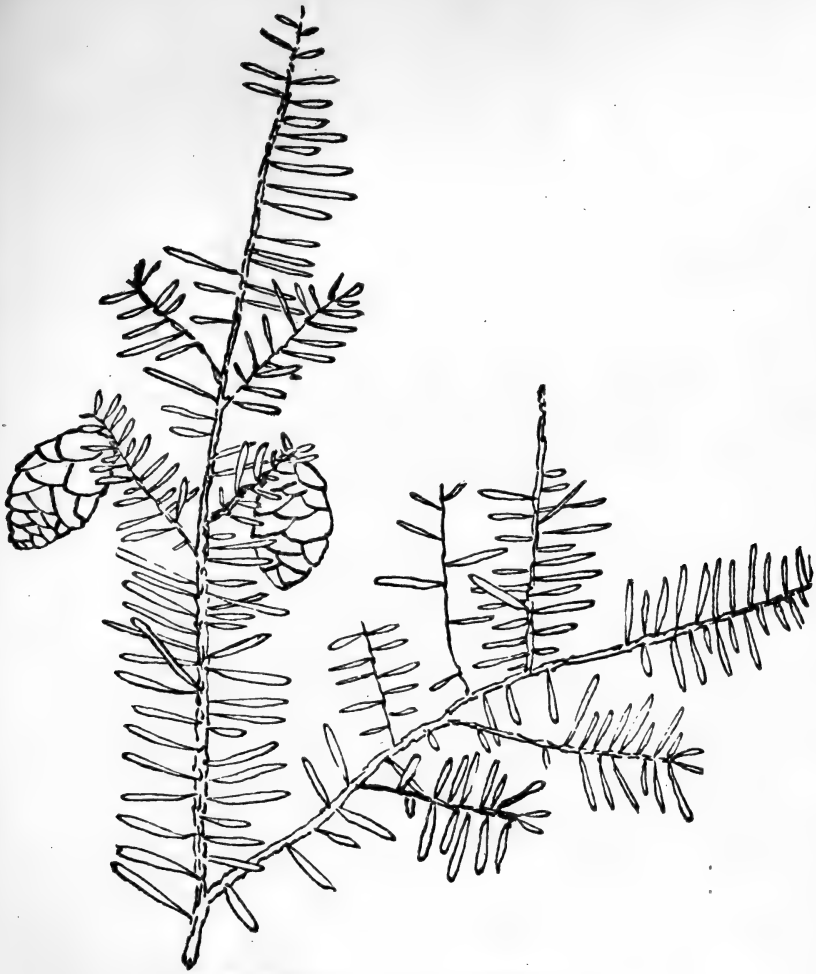


Fig. 89.—Hemlock. T. Canadènsis (L.), Carr.
NATURAL SIZE.

Bark, reddish and scaly; when old, somewhat roughened by long, shallow furrows.

Cones, very *small* (three fourths of an inch long); *drooping;* oval or egg-shape. *Scales*, few, thin, rounded, and entire. The seed with the wing is about three fourths the length of the scale. The cone *does not fall apart when ripe.*

Found, from Southern New Brunswick and the Valley of the St. Lawrence through the Northern States to Delaware, and along the Alleghany Mountains to Alabama. Common northward, often forming large forests.

An evergreen tree, sixty to eighty feet high, irregular in outline, very graceful, especially when young, with light and delicate foliage and horizontal or drooping branches. The timber is very coarse; the bark much used for tanning, and with medicinal qualities.

Genus ÀBIES, Link. (Fir.)

Fig. 90.—Balsam Fir, Balm of Gilead Fir. *A. balsàmea (L.), Miller.*

Leaves, SIMPLE; INDETERMINATE in position because of their closeness; arranged singly up and down the branchlets, at first radiating about equally on every side, afterward flattened into two ranks, as in the Hemlock.

Leaf, one half to one inch long, narrow; apex blunt or notched; edge entire; flat, with a grooved line above and a corresponding raised line below; bright green above; silvery white below.

Bark, smooth and unbroken (especially when young), and usually *covered with "blisters."*

Cones, two to four inches long, one inch broad, *erect*, at the sides of the branchlets; violet-colored. *Scales*, thin and flat, broad and rounded. The thin bracts between the scales are tipped with a slender bristle. *The cone falls apart when ripe.*

Found, from the far North through the Northern States to Pennsylvania, and along the Alleghany Mountains to the high peaks of West Virginia. Common northward in damp forests.

A slender, evergreen tree, twenty to sixty feet high; pyramid-shaped, with regular horizontal branches; its wood is very light and soft. From the "blisters," which form under the bark of the trunk and branches, the valuable Canada balsam is obtained.

The tree is short-lived, and therefore of less value in cultivation.

Genus LARIX, Tourn. (Larch.)

Fig. 91.—Larch, Tamarack, Hackmatack. *L. laricìna (Du Roi), Koch. L. Americàna, Michx.*

Leaves, SIMPLE; INDETERMINATE in position because of their closeness; arranged along the branches in many-leaved bunches without sheaths.

Leaf, thread-like, one to two inches long, withering and falling in the autumn.

Bark, smooth.

Cones, about one half inch long; broad egg-shaped; green or violet when young, becoming purple and brownish as they ripen. *Scales*, thin, nearly round, their edges entire.

Found, from Pennsylvania, Northern Indiana, and Northern Illinois through the Northern States and far northward. It grows usually in low, swampy land, where it often thickly covers large areas.

A tree fifty to one hundred feet high (not evergreen), with a straight trunk and slender, horizontal branches. The wood is durable, hard, and very strong, and is largely used in ship-building, for posts, railroad ties, etc.

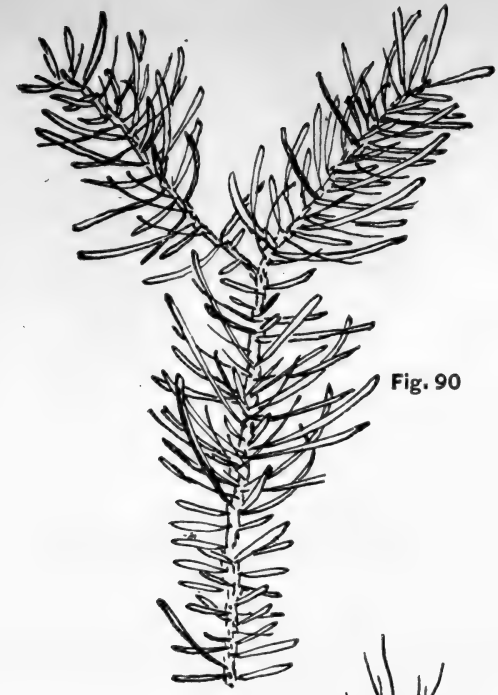
The Indians and Canadians were accustomed to use the fibres of the Larch roots for sewing their bark canoes; and for tightening the seams, the gum of the Balsam Fir.

"Give me of your roots, O Tamarak!
Of your fibrous roots, O Larch-Tree!
My canoe to bind together,
So to bind the ends together,
That the water may not enter,
That the river may not wet me!

* * * * * *

"Give me of your balm, O Fir-Tree!
Of your balsam and your resin,
So to close the seams together
That the water may not enter,
That the river may not wet me!

"And the Fir-Tree tall and sombre,
Sobbed through all its robes of darkness,
Answered wailing, answered weeping,
'Take my balm, O Hiawatha!'"



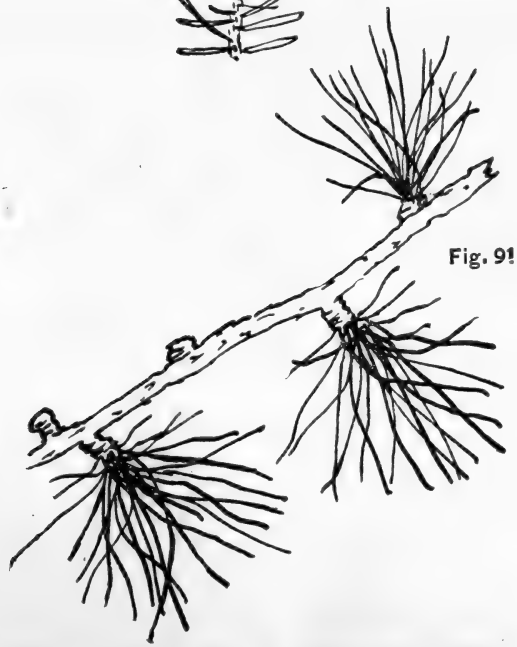


Fig. 90.—Balsam Fir. A. balsàmea (L.), Miller.
Fig. 91.—Larch. L, laricina (Du Roi), Koch.
NATURAL SIZE.

Genus CHAMÆCYPARIS, Spach. (White Cedar.)

Fig. 92.—White Cedar. *C. thyoïdes (L.), B.S.P. C. sphæroïdea, Spach.*

Leaves, SIMPLE; INDETERMINATE in position because of their smallness and closeness. They are scale-like, somewhat egg-shape, overlapping each other, and closely pressed in four rows up and down the very flat branchlets. Each leaf has at its centre a raised gland, easily distinguished if held between the eye and the light.

Bark, fibrous. The "spray" (formed from the flat branchlets) is itself flat and very delicate and of a *dull green.*

Cones, about one fourth of an inch in diameter, *round*, variously placed, compact, *purplish* as they ripen; opening when ripe *toward the centre line* (*i. e.*, not toward its base). *Scales*, fleshy, *shield-shaped and apparently fastened near their centres*, with the edge *several-pointed*, and with a *sharp point or knob in the centre.* *Seeds*, usually four to eight under each scale, oval, with wide wings at the sides.

Found, in deep, cold swamps (filling them densely and exclusively), from Southern Maine along the coast to Florida, and along the Gulf coast to Mississippi.

A tapering evergreen tree, thirty to seventy feet high, with light and durable wood, largely used in boat-building, for wooden-ware, shingles, etc.

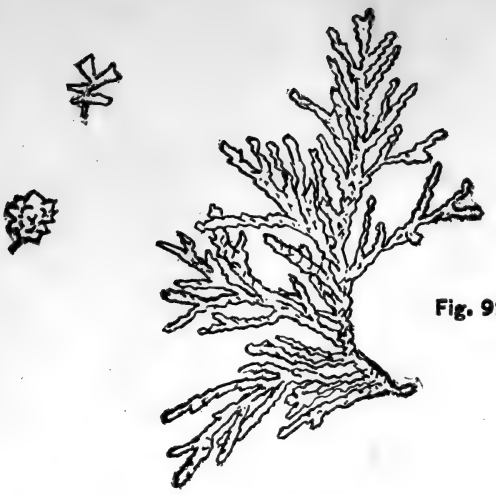


Fig. 92

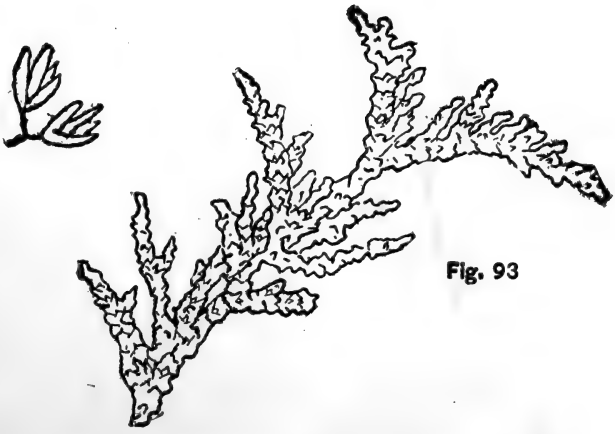


Fig. 93

Fig. 92.—White Cedar. C. thyoides (L.), B. S. P.
Fig. 93.—Arbor Vitæ. (T. occidentàlis, L.)
NATURAL SIZE.

Genus THÙYA, L. (Arbor Vitæ.)

From a Greek word meaning to sacrifice, because of the use of the fragrant wood in sacrifice.

Fig. 93.—Arbor Vitæ, White Cedar. *T. occidentàlis, L.*

Leaves, SIMPLE; INDETERMINATE in position because of their smallness and closeness. They are scale-like, somewhat egg-shape, overlapping each other, and closely pressed in four rows up and down the very flat branchlets. Each leaf has at its centre a raised gland, easily distinguished if held between the eye and the light.

Bark, fibrous. The "spray" (formed from the flat branchlets) is itself flat and of rather a *bright green.*

Cones, about five twelfths of an inch in length, *long oval* or *reverse egg-shape*, *nodding*, *yellowish-brown* as they ripen, *dry and opening to the base* when ripe. *Scales*, pointless, *oval or egg-shape*, *smooth* (*i. e.*, not pointed on the edge or near the centre.) *Seeds*, one to two under each scale, long and narrow (like a small caraway seed); broadly winged all around, with the wing notched at one end.

Found, along the Alleghany Mountains from the high peaks of North Carolina to Northern Pennsylvania and Central New York, northward into Southern Canada and westward; along rocky banks of streams and in swamps; very common at the North, where it often occupies large areas of swamp land. It is very widely cultivated, especially in hedges.

A tapering evergreen tree, twenty to fifty feet high, with close, dense branches, and a light and durable wood.

Genus JUNÌPERUS, L. (Red Cedar.)

From a Celtic word meaning rough.

Fig. 94.—Red Cedar, Savin. *J. Virginiàna, L.*

Leaves, SIMPLE; INDETERMINATE in position because of their smallness and closeness. They are arranged in four rows up and down the branchlets.

In young or rapidly growing sprouts the leaves are awl-shaped or needle-shaped, somewhat spreading from the branch, very sharp and stiff, placed in pairs (or sometimes in threes), usually about one fourth of an inch long, and with the fine branchlets, which they cover, *rounded.*

In the older and slower-growing trees the leaves are scale-like and overlapping, egg-shape, closely pressed to the branchlets which they cover, and with the branchlets *square.* As the branchlets grow, the lower scales sometimes lengthen and become dry and chaffy and slightly spreading.

Bark, brown and sometimes purplish-tinged, often shredding off with age and leaving the trunk smooth and polished.

"*Berries,*" about the size of a small pea, closely placed along the branchlets, bluish, and covered with a whitish powder.

Found, in Southern Canada, and distributed nearly throughout the United States—more widely than any other of the cone-bearing trees.

An evergreen tree, fifteen to thirty feet high (much larger at the South), usually pyramid-shaped, with a rounded base, but varying very greatly, especially near the coast, where it is often twisted and flattened into angular and weird forms. The wood is very valuable, light, straight-grained, durable, fragrant. It is largely used for posts, for cabinet-work, for interior finish, and almost exclusively in the making of lead pencils. The heart-wood is usually a dull red (whence the name), the sap-wood white.

Among the most picturesque objects in a Turkish landscape, standing like sentinels, singly or in groups, and as slender and upright as a Lombardy Poplar, are the black cypress trees (C. sempervirens). They mark the sites of graves, often of those which have long since disappeared. In America, more than any other northern tree, the red cedar gives the same sombre effect, whether growing wild or planted in cemeteries.

The *Common Juniper* (J. communis, L.), common as a shrub, is occasionally found in tree form, low, with spreading or drooping branches, and with leaves resembling those of a young Red Cedar, awl-shaped and spreading, but arranged in *threes* instead of *opposite*.

Fig. 94.—Red Cedar. (J. Virginiàna, L.)

a. Young. *b*. Old.

NATURAL SIZE.

TREES WITH COMPOUND LEAVES

(FEATHER-SHAPED)

LEAVES ALTERNATE

(EDGE ENTIRE)

D I

Genus AILÀNTHUS,* Desf.

From a Greek word meaning "tree of heaven."

Fig. 95.—Ailànthus. [*A. glandulòsa, Desf.*]

Leaves, COMPOUND (odd-feathered, but with the odd leaflet often dwarfed or broken off; leaflets, twenty-one to forty-one); ALTERNATE; EDGE OF THE LEAFLETS ENTIRE, with *one or two coarse, blunt teeth* at each side of their base.

Outline, of leaflet, long egg-shape or lance-shape. *Apex*, taper-pointed. *Base*, squared, or heart-shaped.

Leaf-stem, smooth, round, swollen at base. *Leaflet-stems*, smooth and short.

Leaf, one and a half to six feet long. Leaflets variable, usually about six inches by two and a quarter, rather smooth and thin.

Bark of the trunk, smooth and brown; the new shoots marked with whitish dots.

Flowers, in long bunches at the ends of the branches; greenish, and of very disagreeable odor. June, July.

Seeds, flat, at the centre of greenish and sometimes pink-tinged wings, in large, loose clusters. October.

Found, common in cultivation, and to some extent naturalized.

* This spelling of the name should rule because so given by its author, although, etymologically, Ailantus would be correct, the native Amboyna name being "Aylanto."

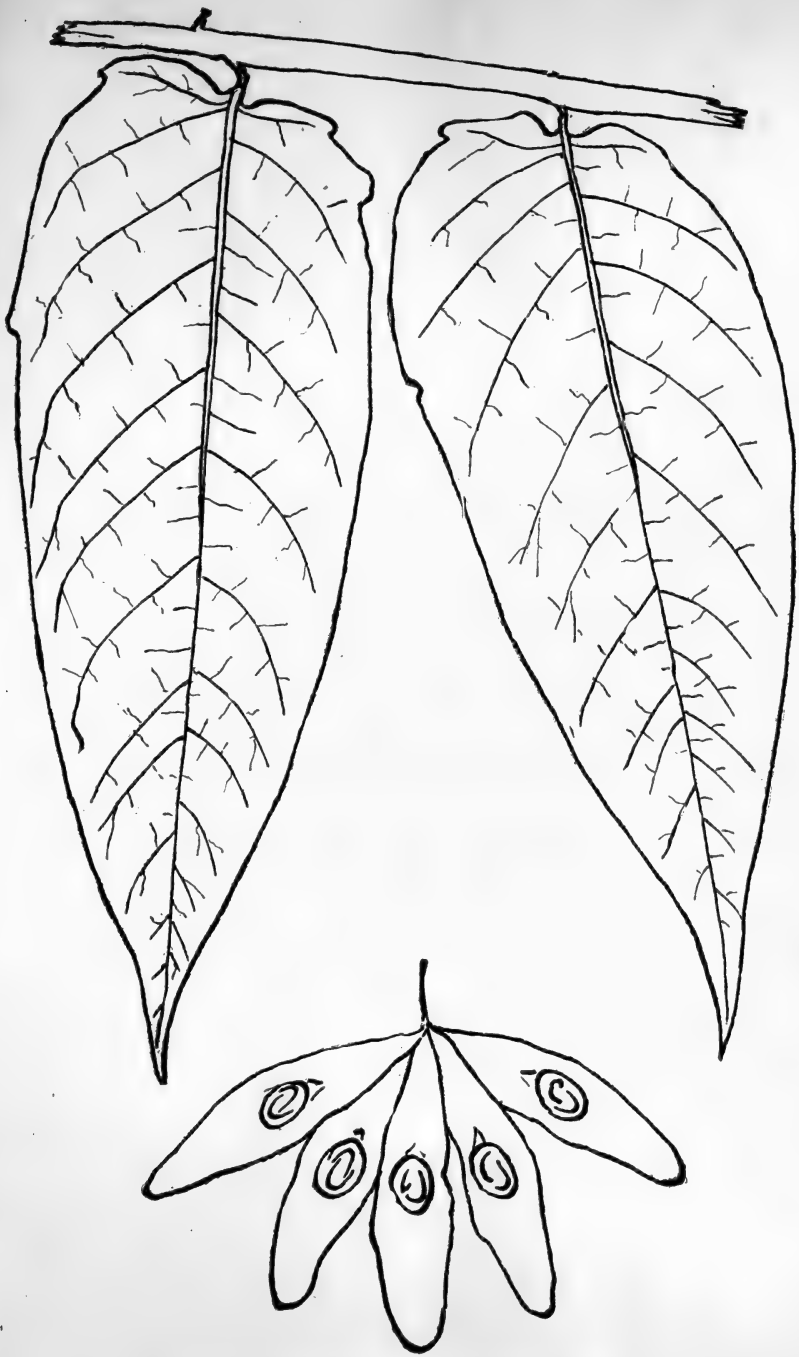


Fig. 95.—Ailànthus. [A. glandulòsa, Desf.]
NATURAL SIZE.

A large, showy tree (sixty to seventy feet high) of remarkably vigorous and rapid growth. It is a native of China. A Jesuit missionary sent its seeds in 1751 to England. In 1784 it was brought from Europe to the United States, and started near Philadelphia. Also about 1804 it was brought to Rhode Island from South America. But the source of most of the trees now found abundantly in the region of New York is Flushing, Long Island, where it was introduced in 1820. It has been a great favorite, and would deserve to be so still were it not for the peculiar and disagreeable odor of its flowers.

Genus ROBÌNIA, L. (Locust.)

Fig. 96.—Locust, Yellow Locust. *R. pseudacàcia, L.*

Leaves, COMPOUND (odd-feathered; leaflets, eleven to twenty-five); ALTERNATE; EDGE ENTIRE.

Outline, oval or egg-shape. *Apex*, rounded. *Base*, rounded.

Stem of leaf, smooth, and covering the leaf-bud of the next year.

Leaflets, very smooth, thin, often slightly tipped with the end of the mid-rib.

Bark of trunk, dark, rough, and very deeply ridged. The smaller branches and young trunks are armed with strong, triangular prickles, but these disappear when the parts are three to four inches thick.

Flowers, showy and abundant; in long, loose clusters drooping from the sides of the branchlets; white; and very fragrant. May, June.

Fruit, a smooth and rather blunt pod, two to three inches long, one and a half inches wide, four- to six-seeded. Seeds, dark brown. September.

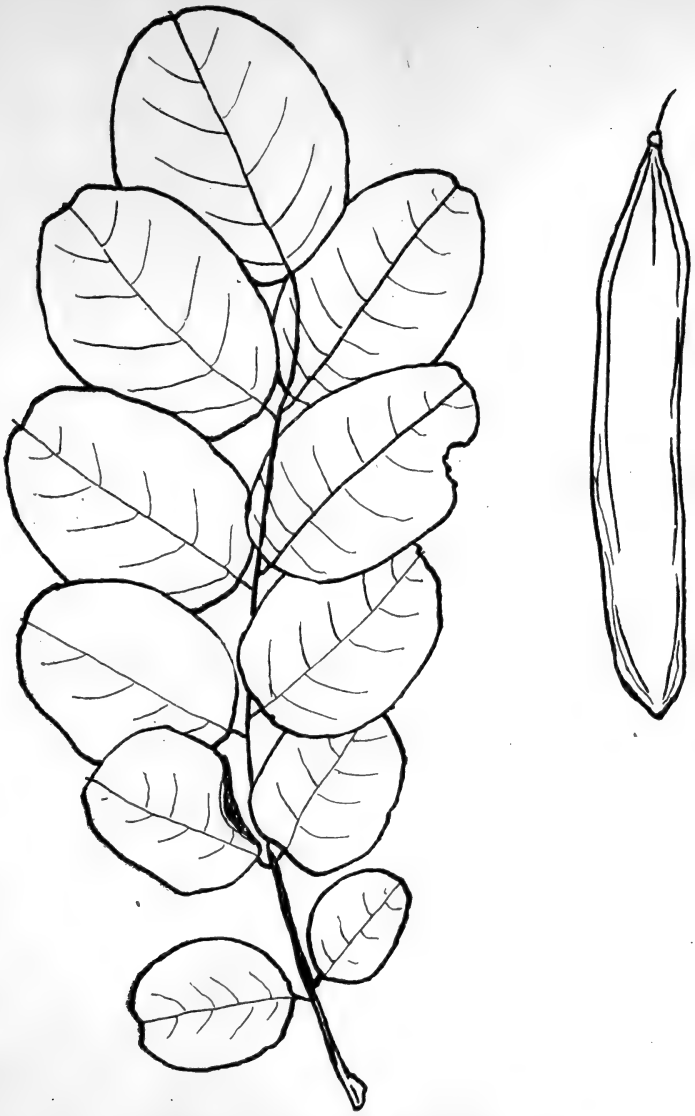


Fig. 96.—Locust. (R. pseudacàcia, L.)
NATURAL SIZE.

Found. Native in the Alleghany Mountains from Pennsylvania (Monroe County—Porter) to Georgia; but now very generally naturalized throughout the United States east of the Rocky Mountains.

A tree usually forty to fifty feet high, sometimes ninety feet, and of rapid growth. Its wood is exceedingly hard and strong, and remarkably durable when in contact with the ground. It is used largely for posts, in ship-building, and in turnery, and it is preferred to all other native wood for treenails. It is one of the most valuable trees of this or of any country. But its cultivation as a timber tree, which at one time was very general, has nearly ceased in the United States on account of the constant damage done by the grub of the Painted Clytus (Clytus pictus). This troublesome borer not only injures the new growth, but also pierces and detaches large branches, leaving the tree ragged and stunted.

Clammy Locust. *R. viscòsa, Vent.*

This species is native to the high ranges of the southern Alleghany Mountains, but is now very widely cultivated and sometimes naturalized in the Atlantic States.

It differs from the common locust especially in its *smaller size*, in having its *leaf-stem and branchlets "sticky"* and slightly rough, and its *flowers* rose-tinted and scarcely fragrant, and in close and erect bunches.

Genus GYMNÒCLADUS, Lam. (Coffee Tree.)

Fig. 97.—Kentucky Coffee Tree, Stump Tree. *G. dioicus (L.), Koch. G. Canadènsis, Lam.*

Leaves, UNEQUALLY TWICE-COMPOUND (odd-feathered; leaflets very numerous—seven to thirteen on the different branches of the main leaf-stem); ALTERNATE; EDGE OF LEAFLETS ENTIRE.

Fig. 97.—Kentucky Coffee Tree. G. dioicus (L.), Koch.
NATURAL SIZE.

Outline of leaflets, egg-shape or oval. *Apex*, sharply taper-pointed. *Base*, slightly heart-shaped or rounded.

Leaf-stem, in the autumn takes a violet tinge.

Leaf, one and one half to three feet long, about one half as wide. *Leaflets*, one to two and one half inches long, of a dull green.

Bark of trunk, rough and scaly, separating in small and hard crosswise and backward-curled strips. Branchlets stout and not thorny.

Flowers, in white spikes along the branches. May–July.

Fruit, in large curved pods (six to ten inches long, by two inches broad), pulpy within, of a reddish-brown color, flattened and hard. Each pod contains several hard, gray seeds one half of an inch or more in diameter. September, October.

Found, in Franklin County, Pennsylvania (Porter), Western New York, westward and southward to Middle Tennessee. Not common.

A tree sixty to eighty feet high, or more, with a rather small and regular head. The fewness and the abruptness of its large branches give to it in the winter a dead and stumpy look, whence one of its common names. Its bruised and sweetened leaves are used at the South for poisoning flies. Its seeds were formerly used as a substitute for coffee.

Genus GLEDÌTSCHIA, L. (Honey Locust.)

Fig. 98.—Honey Locust, Three-thorned Acacia, Honey Shucks. *G. triacànthos, L.*

Leaves, COMPOUND; (even-feathered; leaflets, ten to twenty-two or more, usually about fourteen), sometimes twice-compound; ALTERNATE; EDGE OF LEAFLETS ENTIRE as seen above, but as seen below often remotely and slightly toothed.

Fig. 98.—Honey Locust. (G. triacànthos, L.)
NATURAL SIZE.

Outline of leaflet, long oval or long egg-shape. *Base* and narrowed *Apex*, rounded.

Leaf-stem and very short *Leaflet-stem*, downy.

Leaflets, three fourths to one and a half inches long; about one third as wide. Often several of them (one to three) are partly or wholly divided into smaller leaflets. Surfaces smooth and shining.

Bark of trunk, gray, and much less rough than that of the common Locust (which has a somewhat similar leaf); branchlets brown and often warty. The branches and the trunk, excepting in very young and in quite old trees, are usually thickly covered with *spines*, two to four inches long, which are curved at the base, often two- or three-branched, and of a reddish-brown color.

Flowers, small and greenish.

Fruit, a long, flat pod (nine to eighteen inches long), reddish; somewhat twisted, and filled between the seeds with a pulp which at first is sweet (whence the name "Honey" Locust) but which soon becomes sour. The seeds are flat, hard, and brown.

Found, native in Pennsylvania, westward and southward, but also somewhat naturalized and widely introduced northward.

A tree sometimes seventy feet high, with wide-spreading and graceful branches, and light and delicate foliage. It is often used as a hedge plant.

A variety entirely bare of thorns *(var. inèrmis)* is sometimes found; also a variety *(var. brachycàrpos)* with shorter fruit and thorns.

NOTE.—See *Poison Sumach* (R. venenàta D. C.), with its species, under D, *II.*, page 198.

TREES WITH COMPOUND LEAVES

(FEATHER-SHAPED)

LEAVES ALTERNATE

CONTINUED

(EDGE TOOTHED)

D II

Genus RHUS, L. (Sumach.)

Fig. 99.—Stag-horn Sumach. *R. typhina, L.*

Leaves, COMPOUND (odd-feathered; leaflets, eleven to thirty-one); ALTERNATE; EDGE OF LEAFLETS EVENLY AND SHARPLY TOOTHED.

Outline of leaflet, narrow egg-shape. *Apex,* long, taper-pointed. *Base,* rounded or slightly heart-shaped.

Leaflet-stem, lacking. *Leaf-stem, densely velvety-hairy.*

Leaflet, usually two to four inches long and about one fourth as wide; the under surface whitish and more or less downy.

Leaf, one to two feet or more in length.

Branchlets and stalks, especially towards their ends, covered with a *very dense velvet-like down,* often crimson-tinged. The juice is milky and acid.

Flowers, greenish-yellow, in upright, pyramid-shaped bunches at the ends of the branches. June.

Berries, rounded, somewhat flattened, bright crimson, velvety, crowded. *Stone,* smooth. Juice, acid. September, October.

Found, from New Brunswick and the valley of the St. Lawrence through the Northern States, and southward along the Alleghany Mountains to Central Alabama.

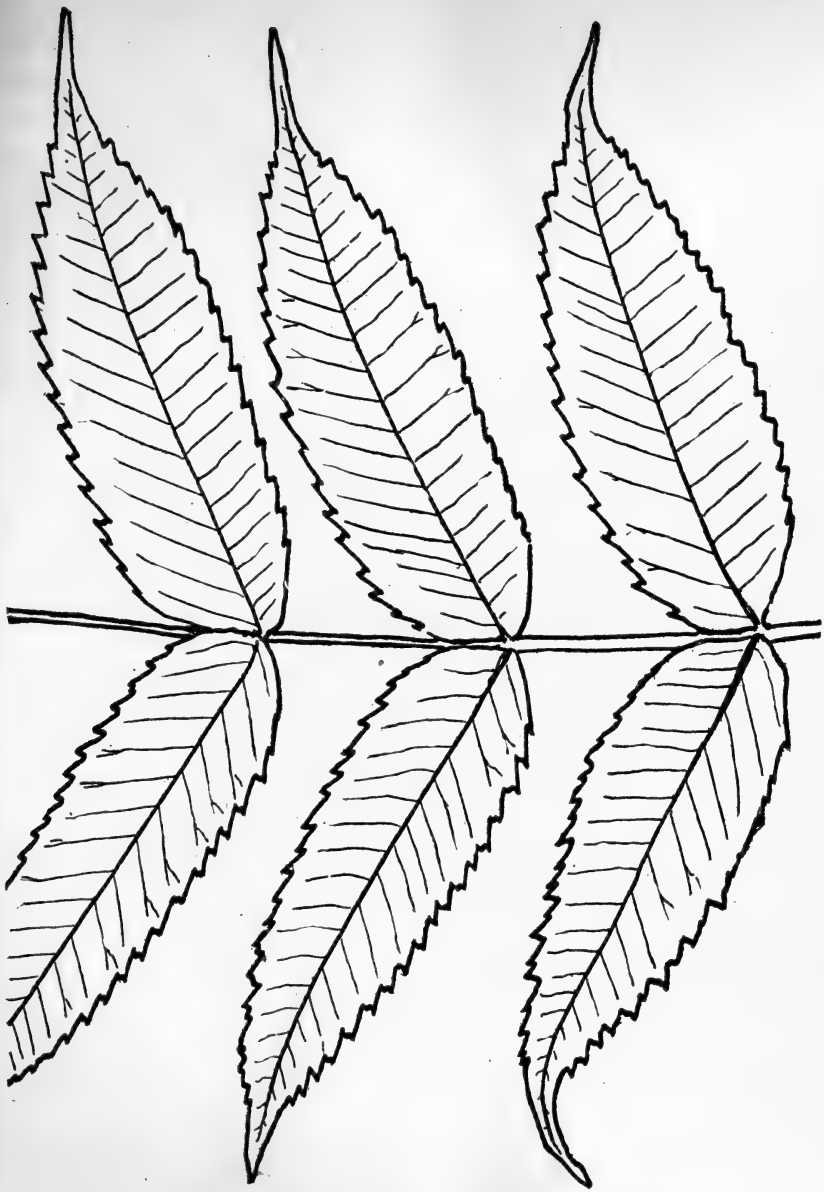


Fig. 99.—Stag-horn Sumach. (R. tỳphina, L.)
NATURAL SIZE.

A small tree, ten to thirty feet high (or often a shrub), with straggling and evenly spreading branches that are leaved mostly toward their ends, giving an umbrella-like look to the tree. The wood is very soft and brittle; yellow within; the sap-wood white. The young shoots, with the pith removed, are used in the spring as "sap quills" in drawing the sap from the sugar maples. The downy and irregular branchlets are suggestive of the horns of a stag, whence the name.

An infusion of the berries is sometimes used as a gargle for sore-throat.

This species is not poisonous.

A variety with deeply gashed leaves *(var. laciniàta)* is reported from Hanover, N. H.

Fig. 100.—Poison Sumach, Poison Dogwood, Poison Elder.
R. venenàta, D. C.

Leaves, COMPOUND (odd-feathered; leaflets, seven to thirteen); ALTERNATE; EDGE OF LEAFLETS ENTIRE.

Outline of leaflet, long oval or egg-shape. *Base*, rounded or pointed. *Apex*, taper-pointed.

Leaflet-stems, short and purplish, or lacking. *Leaf-stem*, smooth, reddish throughout to the end of leaflet, not winged.

Leaflets, thin; one and a half to three inches long; about one half as wide; smooth.

Branches and stalks, smooth.

Flowers, greenish; in long, loose bunches at the bases of the upper leaves.

Berries, rounded, greenish-white, smooth, shining, dry, about the size of a small pea. September.

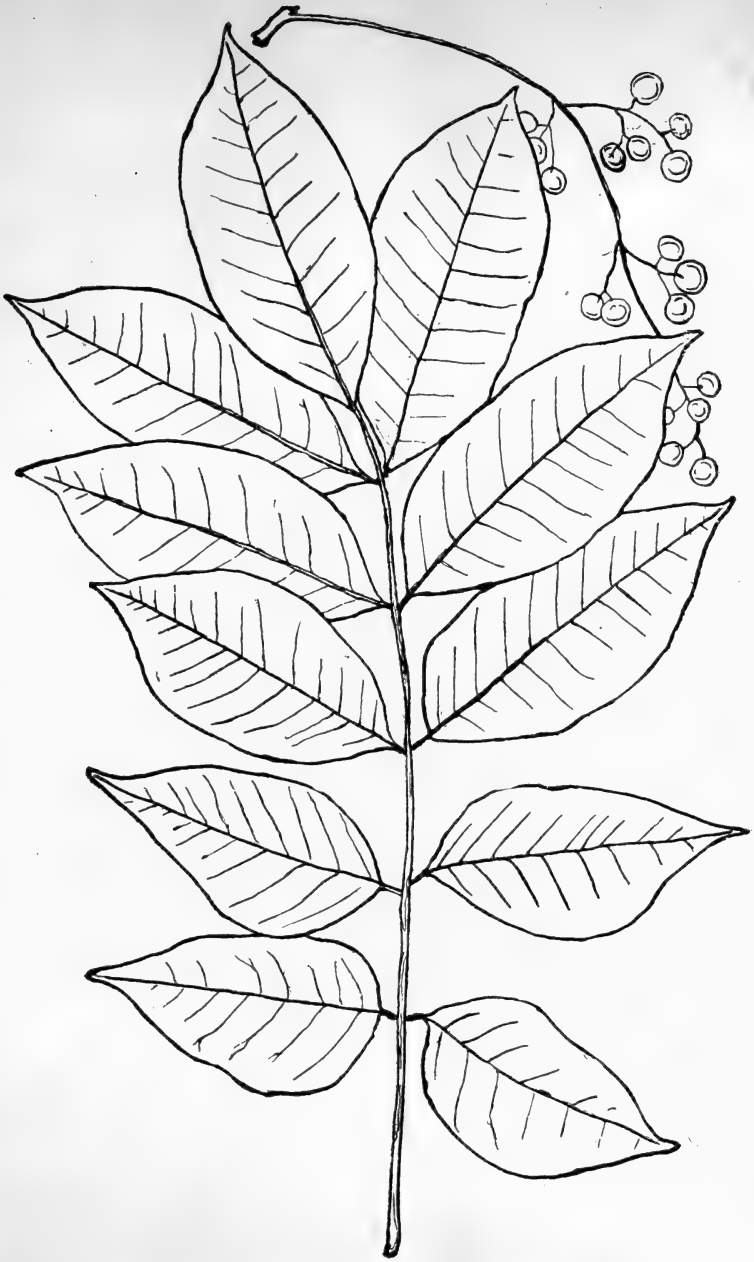


Fig. 100.—Poison Sumach. (R. venenàta, D. C.)
NATURAL SIZE.

Found, from Northern New England westward and southward, oftenest in swamps.

A small tree (or more often a tall shrub), six to eighteen feet high. It is violently poisonous to the touch, causing in most persons a painful eruption; some are poisoned by it without touching it; probably by reason of the drifting pollen of its flowers. A recommended application is sugar of lead, applied after the use of saline cathartics; or a thick paste of bicarbonate of soda rubbed into the skin as soon as the eruption appears. It is also claimed that relief and, if used promptly, frequent cure follow the use of belladonna, of apis mellifica, or of arsenicum album—taken in homœopathic doses.

Apart from other differences the Poison Sumach can be easily and quickly distinguished from all the other sumachs by these signs: It differs from the Stag-horn Sumach and the Smooth Sumach (a shrub) in having the edge of its leaflets entire; from the Dwarf Sumach (a shrub) in the absence of the winged stem between its leaflets, and by its red leaf-stem.

Genus PYRUS, L. (Mountain Ash.)

(NOTE.—See others of the same genus, Sec. A, *II.*, p. 32.)

Fig. 101.—Mountain Ash. *P. Americàna, D. C.*

Leaves, COMPOUND (odd-feathered; leaflets, nine to fifteen); ALTERNATE (often alternate in threes); EDGE OF LEAFLETS FINELY AND SHARPLY TOOTHED.

Outline of leaflet, long and narrow egg-shape. *Apex*, taper-pointed. *Base*, rounded or slightly pointed.

Leaflet-stem, lacking, or very short.

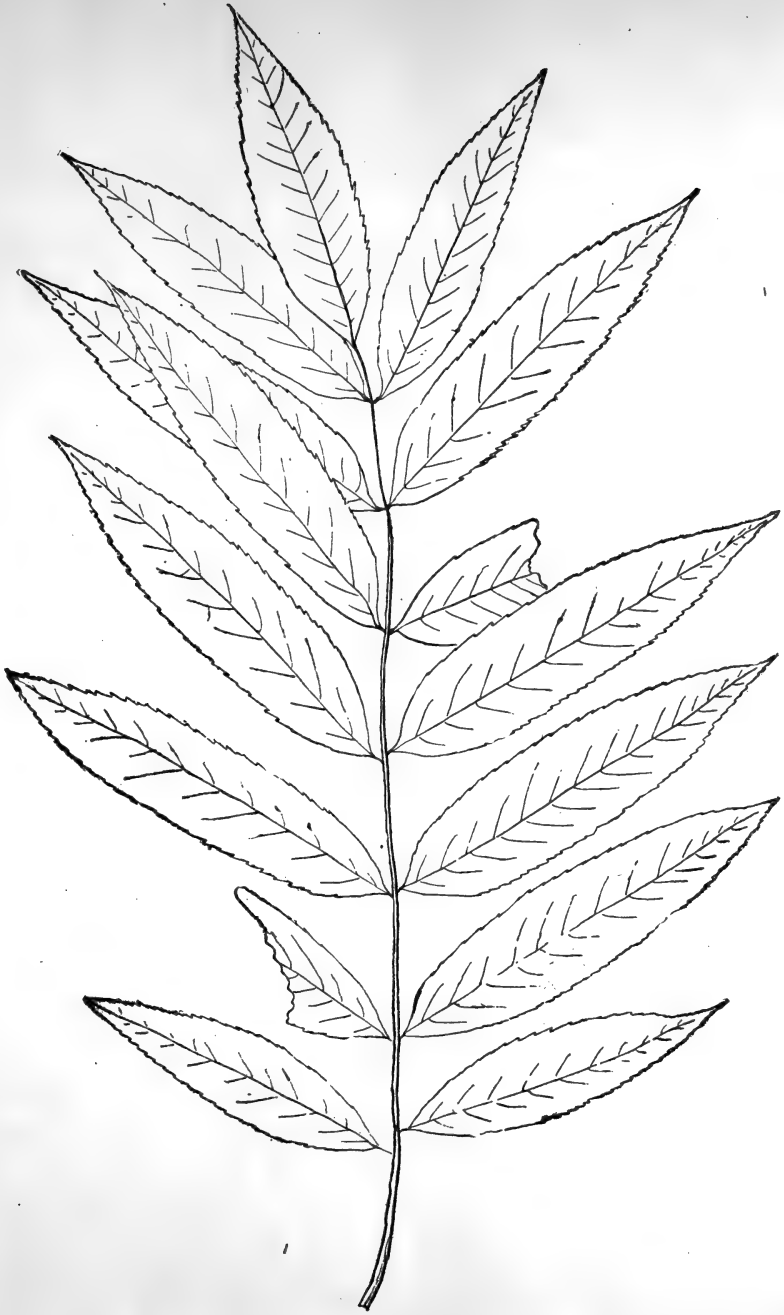


Fig. 101.—Mountain Ash. (P. Americàna, D. C.)
REDUCED ONE FOURTH.

Leaf, eight to twelve inches long. *Leaflet*, two to three and one half inches long; surfaces smooth.

Bark of the trunk, reddish-brown and rather smooth.

Flowers, small and white, in large, flat clusters, over the surface of the tree—fifty to one hundred or more flowers in a cluster. May, June.

Fruit, very ornamental, about the size of peas, scarlet, in large, flat clusters, ripening in autumn and remaining into the winter.

Found, from Labrador and Newfoundland through the Northern States and southward along the Alleghany Mountains. Its finest growth is on the northern shores of Lake Huron and Lake Superior.

A slender, somewhat pyramid-shaped, tree, ten to thirty feet high, much and justly prized as one of the best of the native trees for ornamental planting. Its bark and the unripe fruit are very astringent, and are sometimes used medicinally.

A slightly different species (P. sambucifòlia) is sometimes found in cold swamps and on the borders of streams, along the Northern frontier.

The cultivated *European Mountain Ash* or *Rowan Tree* [P. ancupària], which is very common in many parts of Europe, and especially in the Highlands of Scotland, differs but slightly from the American Mountain Ash. It varies chiefly in the following items: *Leaflets* blunter, and rather coarsely double-toothed. *Bark* rather rough. *Fruit* larger, oftenest red, but sometimes orange.

The Mountain Ash or "Rowan Tree" has for a long time been renowned as a safeguard against witches and all evil spirits. A mere twig of it suffices.

"Rowan-tree and red thread
Put the witches to their speed."

"The spells were vain, the hag returned
To the queen in sorrowful mood,
Crying that witches have no power
Where there is row'n-tree wood."

Genus JUGLANS, L. (Walnut.)

From two Latin words meaning nut of Jupiter.

Fig. 102.—Black Walnut. *J. nigra, L.*

Leaves, COMPOUND (odd-feathered; leaflets, thirteen to twenty-one); ALTERNATE; EDGE OF LEAFLETS SHARP-TOOTHED.

Outline of leaflet, long egg-shape. *Apex*, taper-pointed. *Base*, rounded or slightly heart-shaped, and one-sided.

Leaf-stem, slightly downy. *Leaflet-stem*, very short.

Leaf, twelve inches long, or more. *Leaflets*, about two to four inches long; the lower pairs shortest; slightly downy beneath.

Bark, blackish and thick.

Fruit, about two inches in diameter; rounded; the *husk* greenish-yellow when ripe, roughly dotted, spongy, decaying without splitting into sections; the *nut* dark, and deeply and roughly furrowed. October.

Found, from Western Massachusetts westward and southward. Its finest growth is west of the Alleghany Mountains. Eastward it is now everywhere scarce.

A tree thirty to sixty feet high, or often much higher. Its rich, dark-brown heart-wood is of great value, and has been more widely used in cabinet-work, for interior finish, and for gun-stocks than the wood of any other North American tree.

Fig. 103.—Butternut, White Walnut. *J. cinèrea, L.*

Leaves, COMPOUND (odd-feathered; leaflets, fifteen to seventeen); ALTERNATE; EDGE OF LEAFLETS SHARP-TOOTHED.

Outline of leaflet, long egg-shaped or long oval. *Apex*, taper-pointed. *Base*, rounded.

Leaf-stem, downy and "*sticky*."

Leaf, twelve to twenty inches long. *Leaflet*, three inches or more in length; downy, especially beneath.

Bark of the branches, light gray and smoothish. *Twigs*, as well as leaf-stems and fruit, very sticky.

Fruit, long (two to three inches), pointed. *Husk*, very sticky; green at first; brown when ripe, becoming very dark; not splitting in sections. *Nut*, deeply and roughly furrowed and sharp-ridged, with a sweet, oily kernel. September.

Found, in Southern Canada, and common in New England and the Middle and Western States.

A tree twenty to fifty feet high, with a short, stout trunk and very wide-reaching, horizontal branches. The heart-wood is reddish or light brown, not as dark nor as hard as in the Black Walnut. It is used for ornamental cabinet-work and interior finish.

Fig. 102

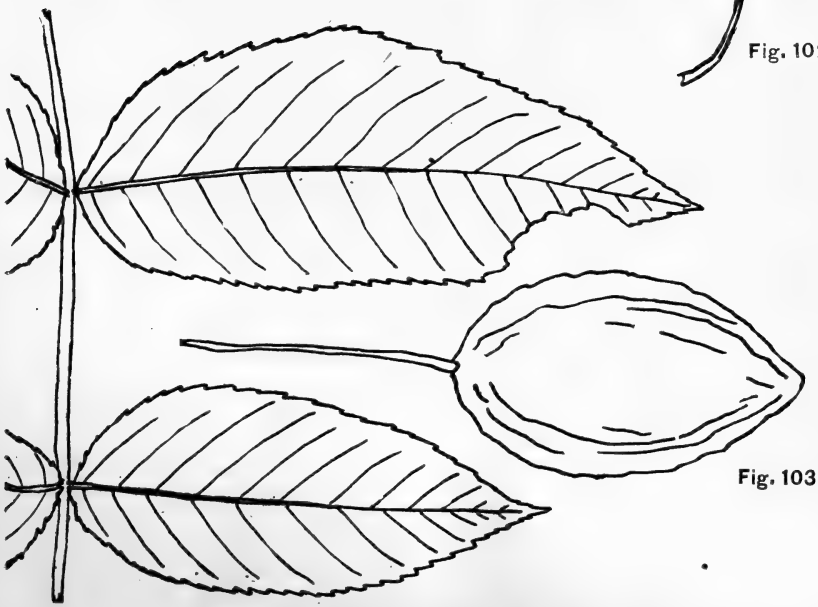


Fig. 103

Fig. 102.—Black Walnut. (J. nigra, L.)
Fig. 103.—Butternut. (J. cinèrea, L.)
LEAFLETS AND FRUIT REDUCED ONE THIRD.

Genus HICÒRIA, Raf. CÁRYA, Nutt. (Hickory.)

From a Greek word meaning round, in allusion to the shape of the nut.

Fig. 104. — Shag-bark, Shag-bark Hickory, Shell-bark Hickory. *H. ovàta (Mill), Britton. C. alba, Nutt.*

Leaves, COMPOUND (odd-feathered; leaflets, five); ALTERNATE; EDGE OF LEAFLETS SHARP-TOOTHED.

Outline of leaflet, long oval, reverse egg-shape or egg-shape, the lower pair differing in shape from the others, and much smaller. *Apex*, long-pointed. *Base* of the end leaflet, wedge-shape; of the others, more or less blunted.

Leaf-stem, rough throughout. *Buds*, large and scaly, often of a green and brown color.

Leaflet-stems, lacking (or scarcely noticeable), excepting the roughish stem of the end leaflet.

Leaflets, four to eight inches long; roughish below.

Bark, dark and very rough in the older trunks, peeling up and down in long, shaggy strips. Often the strips cling at their middle and are loose at each end.

Fruit, round, nearly one and a half to two inches in diameter; the *husk*, thick (nearly half an inch), depressed at the centre, grooved at the seams, and wholly separating into four pieces at maturity; the *nut*, about one inch long, often the same in breadth, slightly flattened at the sides, angular, nearly pointless, whitish, with a rather thin shell, and a large finely flavored kernel. October.

Found, from the valley of the St. Lawrence River to Southeastern Minnesota, and southward to Western Florida. Its finest growth is west of the Alleghany Mountains.

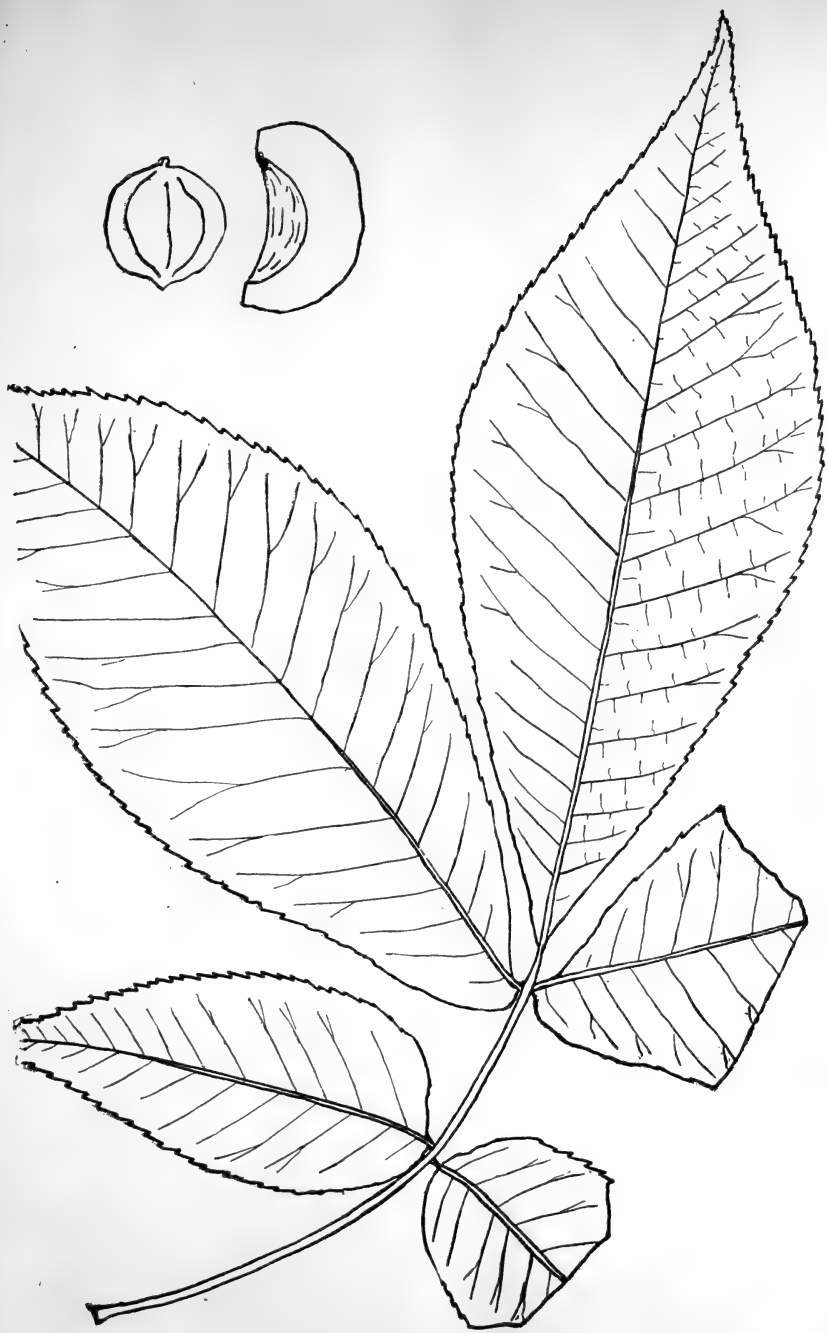


Fig. 104.—Shag-bark. H. ovàta (Mill), Britton.
LEAF AND FRUIT REDUCED ONE THIRD.

A tree, fifty to eighty feet high, of great value. Its tough and elastic wood is used in making agricultural implements, carriages, axe-handles, etc. It ranks also among the best of woods for fuel. Most of the "hickory nuts" of the markets are from this species.

All the Hickories are picturesque trees. Their tendency, even when standing alone, is to grow high, and with heads that, instead of being round, are cylinder-shaped to the very top, with only enough breaks and irregularities to add to the effect. This tendency is more marked in the Hickories than in any other of the leaf-shedding trees of North America. They are worthy of the name sometimes given them of "the artist's tree."

Big Shell-bark, King Nut. *H. sulcàta (Willd), Britton. C. sulcàta, Nutt.*

This species differs from the Shag-bark chiefly in these items:

Leaflets, seven to nine, usually nine.

Leaf, ten to twenty inches long.

Nut, oval, strongly pointed, with a dark yellowish shell, nearly twice as large as the Shag-bark nut, and with a less pleasantly flavored kernel.

Bark, in narrower strips and of a lighter color.

Found, in Bucks County, Pennsylvania (Porter), and westward. Local and rare.

Fig. 105.—Mocker-nut, White-heart Hickory, Black Hickory, Big-bud Hickory. *H. alba (L.), Britton. C. tomentòsa, Nutt.*

Leaves, COMPOUND (odd-feathered, leaflets, seven to nine); ALTERNATE; EDGE SLIGHTLY AND RATHER ROUNDLY TOOTHED.

Outline of leaflets, mostly long oval, the lower pairs becoming smaller and more egg-shaped. *Apex* and *Base*, about the same as in the Shag-bark.

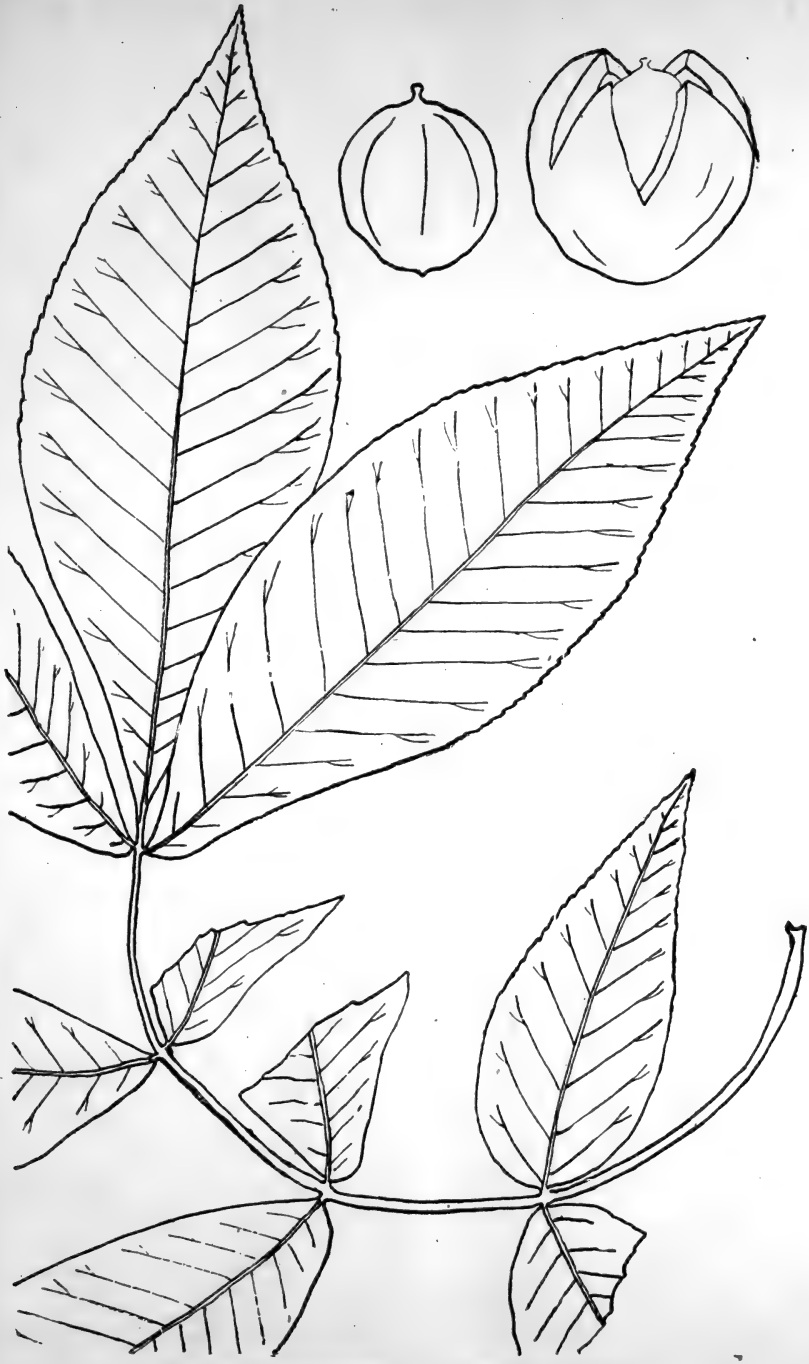


Fig. 105.—Mocker-nut. H. alba (L.), Britton.
LEAF AND FRUIT REDUCED ONE THIRD.

Leaf-stem, rough throughout. *Buds*, large and round and covered with downy, *yellowish-brown* scales, or, in winter, with hard and grayish-white scales.

Leaflet-stems, lacking (or scarcely noticeable), except the short, roughish stem of the end leaflet.

Leaflets, two to seven inches long, rough beneath, especially on the ribs; fragrant when crushed.

Bark, rough, becoming cracked across, but *not scaly*.

Fruit, rounded, slightly egg-shaped or oval, one and one half to two inches or more in length. The *husk* is about one fourth of an inch thick and splits nearly to the base when ripe. *Nut*, slightly six-angled, light brown, with a very thick and hard shell. The *kernel* is sweet, but small. October.

Found, common, in dry woods, especially southward and westward. It grows in Southern Canada and in all the Atlantic States. In size and in the quality of its timber the tree resembles the Shag-bark.

Fig. 106.—Small-fruited Hickory. *H. microcàrpa (Nutt), Britton C. microcàrpa, Nutt.*

Leaves, COMPOUND (odd-feathered; leaflets, five to seven, oftenest five); ALTERNATE; EDGE OF LEAFLETS SHARP-TOOTHED.

Outline of leaflets, mostly long oval. *Apex* and *Base* pointed.

Leaf-stem, smooth.

Leaflet-stems, lacking (or scarcely noticeable), excepting the short stem of the end leaflet.

Leaflets, mostly four to eight inches long, remarkably *smooth*, excepting that the under surface is tufted in the angles of the ribs and usually dotted with dark glandular spots.

Bark, rough and close.

Fruit, broad egg-shape. *Husk*, thin, splitting part way to the base. *Nut, small*, (three fourths of an inch in

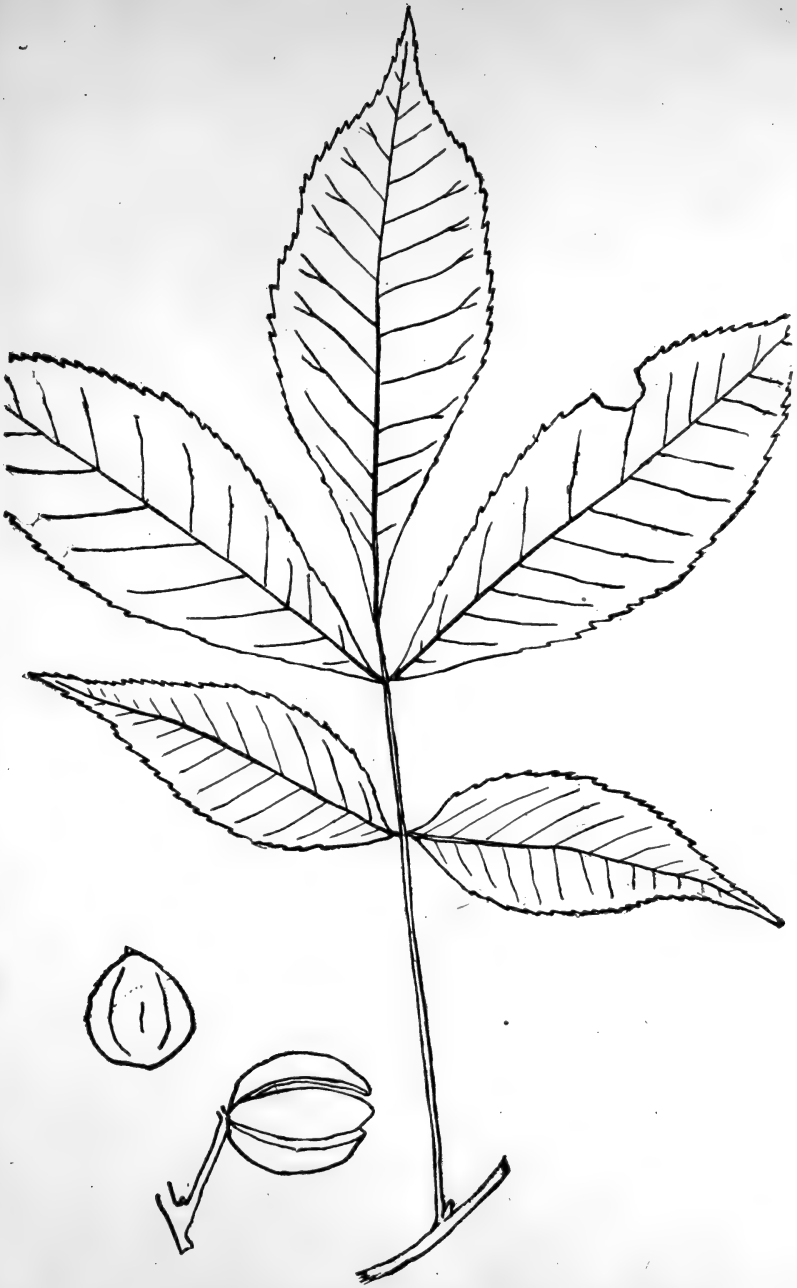


Fig. 106.—Small-fruited Hickory. H. microcàrpa (Nutt), Britton.
LEAF AND FRUIT REDUCED ONE THIRD.

diameter), not angled, not sharp-pointed, and with a thin shell.

Found, on moist ground, New York to Delaware, west to Michigan and Illinois, rarely, if ever, in New England.

In size and in the quality of its timber the tree resembles the other hickories. By its leaves the species appears to be allied with the Pig-nut; by its nuts, with the Mocker-nut.

Fig. 107, *a* and *b*.—**Pig-nut, Broom Hickory.** *H. glabra (Mill), Britton. C. glabra, Torr. C. porcina, Nutt.*

Leaves, COMPOUND (odd-feathered; leaflets, five to nine, usually seven); ALTERNATE; EDGE OF LEAFLETS SHARP-TOOTHED.

Outline of leaflets, usually long oval. *Apex*, taper-pointed. *Base* of end leaflet, wedge-shaped, of the others more or less rounded or slightly pointed.

Leaf-stem, smooth. *Leaf-buds*, egg-shape and pointed or rounded, and with their outer scales a polished-brown.

Leaflet-stems, lacking, except the smooth, very short stem of the end leaflet.

Leaflets, mostly two to five inches long (the lower ones much the smallest), *smooth* above and below.

Bark, not shaggy.

Fruit, of two forms: *a*, pear-shape, *b*, rounded. *Husks*, very thin, splitting about half-way to the base. *Nut*, about one inch in diameter; in *b* somewhat flattened at the sides and slightly hollowed above, and with the apex a sharp point. *Shell*, rather thin, smooth, hard, and bluish-gray. *Meat*, small and sweetish or slightly bitter.

Found, from Southern Maine westward and southward.

In size and in the quality of its timber the tree resembles the other hickories.

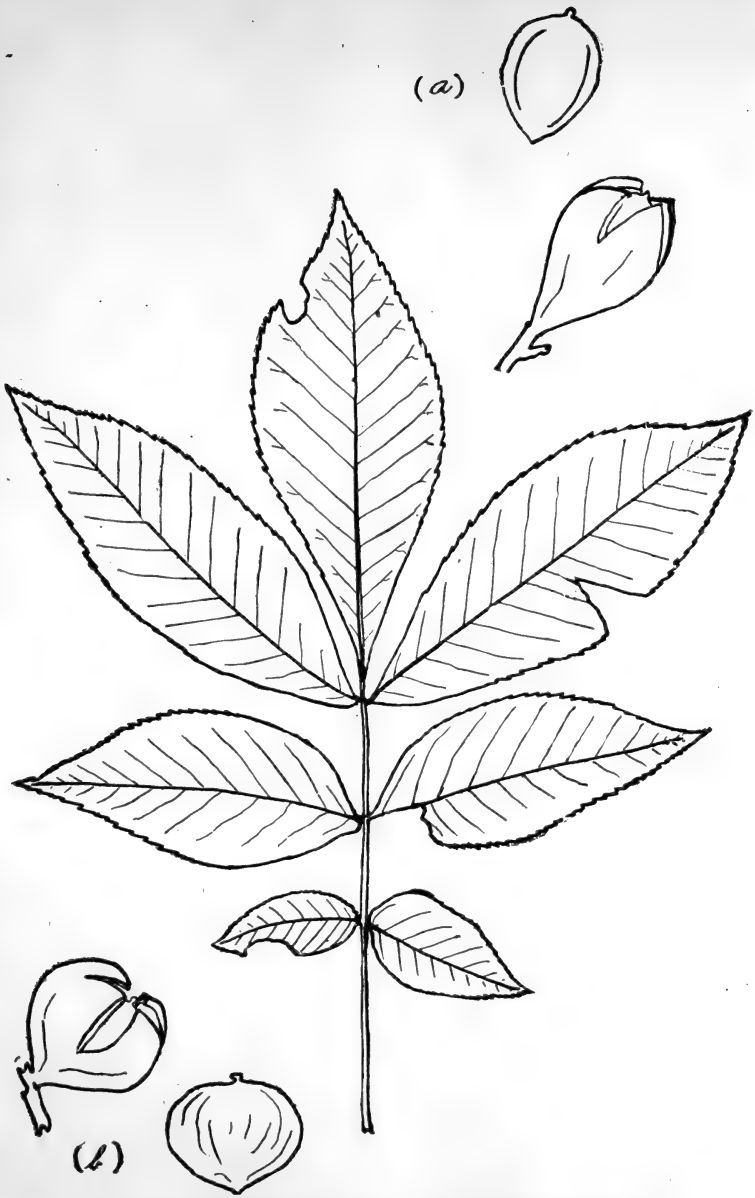


Fig. 107, *a* and *b*.—**Pig-nut. H. glabra (Mill), Britton.**
LEAF AND FRUIT REDUCED ONE THIRD.

Fig. 108.—Bitter-nut, Swamp Hickory. *H. minima (Marsh), Britton. C. amara, Nutt.*

Leaves, COMPOUND (odd-feathered; leaflets, seven to eleven); ALTERNATE; EDGE OF LEAFLET SHARP-TOOTHED.

Outline of leaflet, long oval or long egg-shape. *Apex*, taper-pointed. *Base*, pointed or blunted.

Leaf-stem, rather slender, somewhat downy, and *often flattened and winged. Leaf-buds, small*, slightly rounded or (at the ends of the branchlets) pointed, and yellow.

Leaflet-stems, lacking, except the short stem of the end leaflet.

Leaflets, four to six inches long, the upper one usually short; *smooth* on both sides, or with a slight, scattered down below.

Bark, rather smooth.

Fruit, rounded or slightly egg-shaped, dark green. *Husk*, very thin and fleshy, never becoming entirely hard, with prominent *winged edges* at the seams, only two of which reach more than half-way to the base. It divides half-way down when ripe. *Nut*, barely one inch long, heart-shaped at the top, broader than long, white and smooth. *Shell*, so thin that it can be broken with the fingers. *Kernel, intensely* bitter.

Found, usually in wet grounds, though often also on rich uplands, from Southern Maine westward and southward. It reaches its finest growth in Pennsylvania and Ohio.

A rather smaller and less valuable tree than the rest of the hickories.

NOTE.—See *Honey Locust* (G. triacánthos, L.), under D, *I.*, page 192.

Fig. 108.—Bitter-nut. H. mìnima (Marsh), Britton.
LEAF AND FRUIT REDUCED ONE THIRD.

TREES WITH COMPOUND LEAVES

(FEATHER-SHAPED)

CONTINUED

LEAVES OPPOSITE

(EDGE ENTIRE OR TOOTHED)

E I, II

Genus NEGÙNDO, Moench.

Fig. 109.—Ash-leaved Maple, Box Elder. *N. acerοìdes, M.*

Leaves, COMPOUND (odd-feathered; leaflets, three, sometimes five, rarely seven); OPPOSITE; EDGE OF LEAFLET REMOTELY AND UNEQUALLY COARSE-TOOTHED.

Outline of leaflets, egg-shape or oval. *Apex*, taper-pointed. *Base*, variable and often uneven.

Leaflets, slightly rough; the *ribs* very marked.

Bark of young trunks, smoothish and yellowish-green; twigs, light green.

Flowers, small and greenish, in delicate, drooping clusters from the sides of the branches.

Fruit, large, yellowish-green, smooth, in long, loose, late-hanging clusters.

Found, North, South, and West. One of the most widely distributed of the North American trees, with its finest growth in the region of the Wabash and Cumberland rivers.

A tree twenty to thirty feet high, with spreading branches. Its wood is light and of slight value.

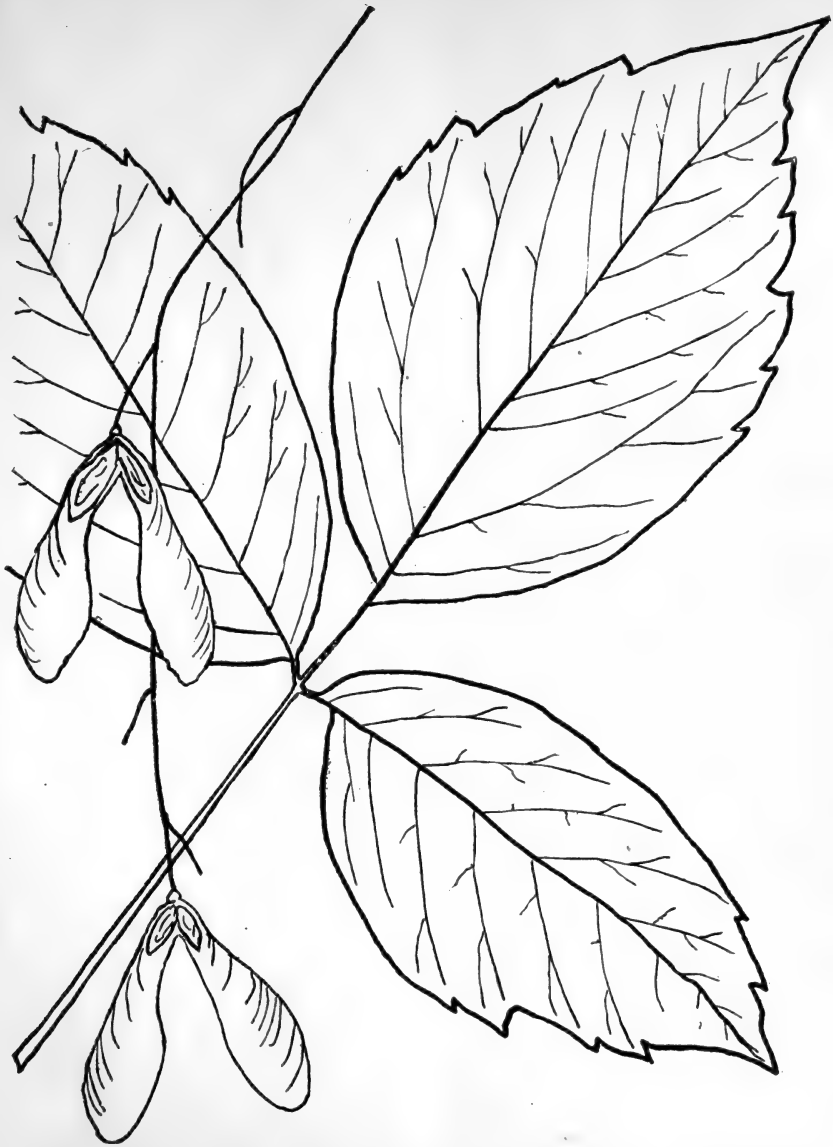


Fig. 109.—Ash-leaved Maple. (N. acerōides, M.)
NATURAL SIZE.

(Genus FRÀXINUS, L. (Ash.)

From a Greek word meaning "separation," because of the ease with which the wood of the Ash can be split.

Fig. 110.—White Ash. *F. Americàna, L.*

Leaves, COMPOUND (odd-feathered; leaflets, seven to nine); OPPOSITE; EDGE OF LEAFLETS SLIGHTLY TOOTHED OR ENTIRE; entire at the base.

Outline of leaflet, long oval or long egg-shape. *Apex,* taper-pointed. *Base,* somewhat pointed.

Leaf-stem, smooth. *Leaflet-stem,* about one fourth of an inch long, or more; smooth. *Leaf-bud,* rusty-colored and smooth.

Leaflet, two to six inches long; pale beneath; downy when young, but becoming nearly smooth, except on the ribs.

Bark of the trunk, light gray. In very young trees it is nearly smooth, but it soon becomes deeply furrowed—the furrows crossing each other, and so breaking the bark into irregular, somewhat square or lozenge-shaped plates. Then in very old trees it becomes smooth again, from the scaling off of the plates. The branches are smooth and grayish-green. The young shoots have a polished, deep-green bark, marked with white lines or dots.

Winged seeds, one and a half to two inches long, with the "wing" about one fourth of an inch wide, hanging in loose clusters from slender stems. The base of the seed is pointed and not winged.

Found, in rich woods, from Southern Canada to Northern Florida and westward. It is most common in the Northern States. The finest specimens are seen in the bottom lands of the lower Ohio River basin.

Fig. 110.—White Ash. (F. Americàna, L.)
LEAF AND FRUIT REDUCED ONE THIRD.

A tree forty to eighty feet high. Often the trunk rises forty feet without branching. Its tough and elastic timber is of very great value, being widely used in the manufacture of agricultural implements, for oars, and the shafts of carriages, and in cabinet-work.

I find in the notes of an old copy of White's "Natural History of Selborne" this comment: "The Ash, I think, has been termed by Gilpin the Venus of British trees."

Gerardes' "Herbal" comments: "The leaves of the Ash are of so great a vertue against serpents, as that the serpents dare not be so bolde as to touch the morning and evening shadowes of the tree, but shunneth them afarre off, as Pliny reporteth in his 16 book, 13 chap. He also affirmeth that the serpent being penned in with boughes laide rounde about, will sooner run into the fire, if any be there, than come neere to the boughes of the Ash."

In Scandinavian mythology the great and sacred tree, Yggdrasil, the greatest and most sacred of all trees, which binds together heaven and earth and hell, is an Ash. Its roots spread over the whole earth. Its branches reach above the heavens. Underneath lies a serpent; above is an eagle; a squirrel runs up and down the trunk, trying to breed strife between them.

pennsylvanica Marshall

Fig. III.—Red Ash. *F. pubèscens, Lam.*

Leaves, COMPOUND (odd-feathered; leaflets, seven to nine); EDGE OF LEAFLETS NEARLY ENTIRE OR SLIGHTLY TOOTHED.

Outline of leaflet, long oval or egg-shape. *Apex*, taper-pointed. *Base*, somewhat pointed.

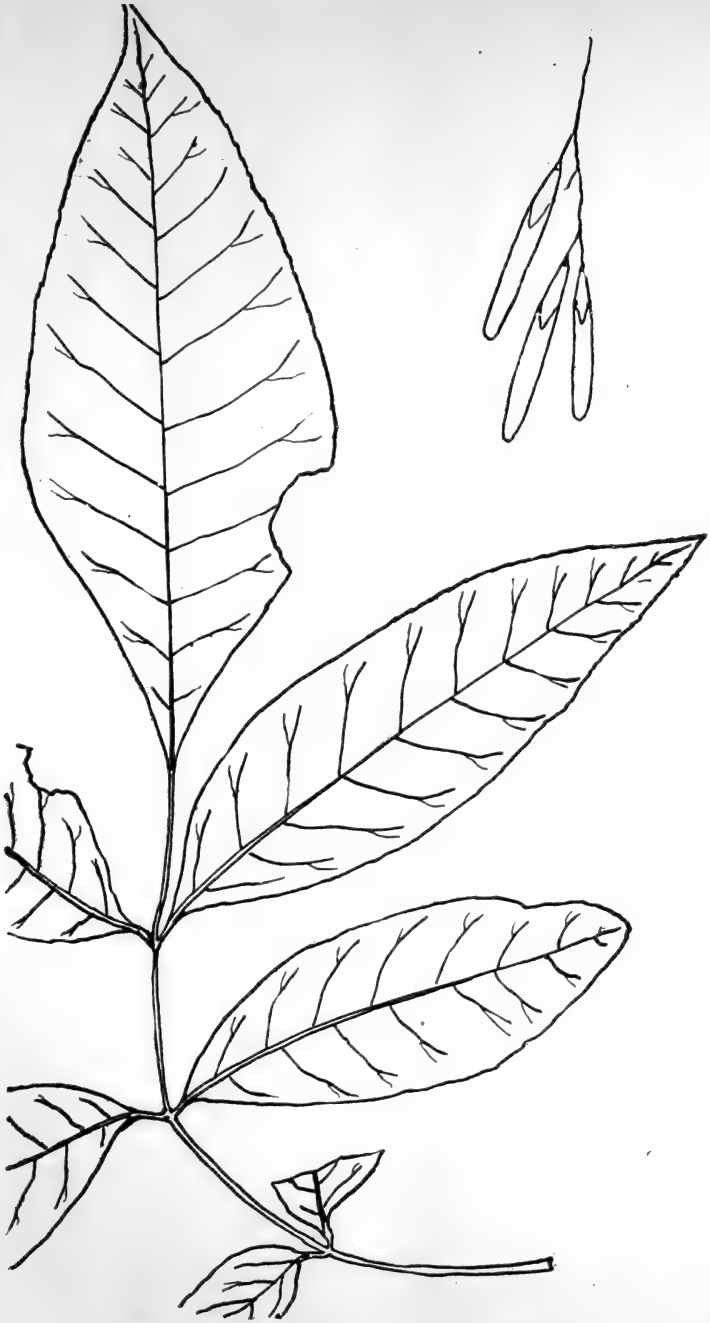


Fig. 111.—Red Ash. (F. pubèscens, Lam.)

LEAF AND FRUIT REDUCED ONE THIRD.

Leaf-stem, velvety-downy. Leaflet-stem, about one fourth of an inch long, or somewhat less, and *velvety-downy. Leaf-bud,* rounded, nearly concealed by the leaf-stem, downy, and of a dark, rusty brown.

Leaflet, two to six inches long, *downy beneath,* and pale, becoming reddish.

Bark of the trunk, *dark* ashy or granite-gray, or of a deep brown. It is slightly furrowed up and down, the furrows seldom joining or crossing. The branches are grayish. The young shoots are *velvety,* with a grayish or rusty down.

Winged seeds, resembling those of the White Ash, but usually with the end of the wing more rounded.

Found, along borders of streams and in low and swampy ground—New Brunswick to Minnesota, and southward to Northern Florida and Alabama; but rare west of the Alleghany Mountains. Its finest growth is in the Northern Atlantic States.

A medium-sized tree, usually thirty to fifty feet high, of less value than the White Ash.

Fig. 112.—Green Ash. *F. viridis, Michx., f.*

Leaves, COMPOUND (odd-feathered; leaflets, five to nine); OPPOSITE; EDGE OF LEAFLETS USUALLY SHARP-TOOTHED, but with the base entire.

Outline of leaflet, egg-shape or oval. *Apex,* taper-pointed. *Base,* pointed, often wedge-shaped.

Leaf-stem, smooth. *Leaflet-stem,* about one fourth of an inch long; smooth. *Leaf-bud,* grayish-brown and smooth.

Fig. 112.—Green Ash. (F. viridis, Michx., f.)
LEAF AND FRUIT REDUCED ONE THIRD.

Leaflet, green, and of nearly the same shade on each side; not shining, but smooth throughout, excepting that sometimes it is slightly downy in the angles of the ribs.

Bark of the branches, grayish-brown and smooth.

Winged seeds, smaller than those of the White Ash, but with the wing about the same length.

Found, in New England, but mostly southward and westward.

A tree twenty to thirty feet high, of inferior value.

Fig. 113.—Blue Ash. *F. quadrangulàta, Michx.*

Leaves, COMPOUND (odd-feathered; leaflets, five to nine); OPPOSITE; EDGE OF LEAFLETS SHARPLY TOOTHED.

Outline of leaflet, oval to long egg-shape. *Apex*, taper-pointed. *Base*, pointed.

Leaflet-stem, very short. *Leaf-bud*, velvety.

Leaflet, three to four inches long, both sides green; downy beneath.

Bark of the trunk cracks and separates in thin plates, like that of the White Oak. Branchlets smooth and square, or margined when young, becoming nearly round.

Winged seeds, about one and a half inches long, one fourth to one half of an inch wide; blunt, and of nearly the same width at both ends, and with the apex *often notched.*

Found, usually on limestone hills, from Southern Michigan to Central Minnesota, southward to Northeastern Kansas.

A tree sixty to eighty feet high, used for flooring, carriage building, etc. Its inner bark furnishes a blue dye.

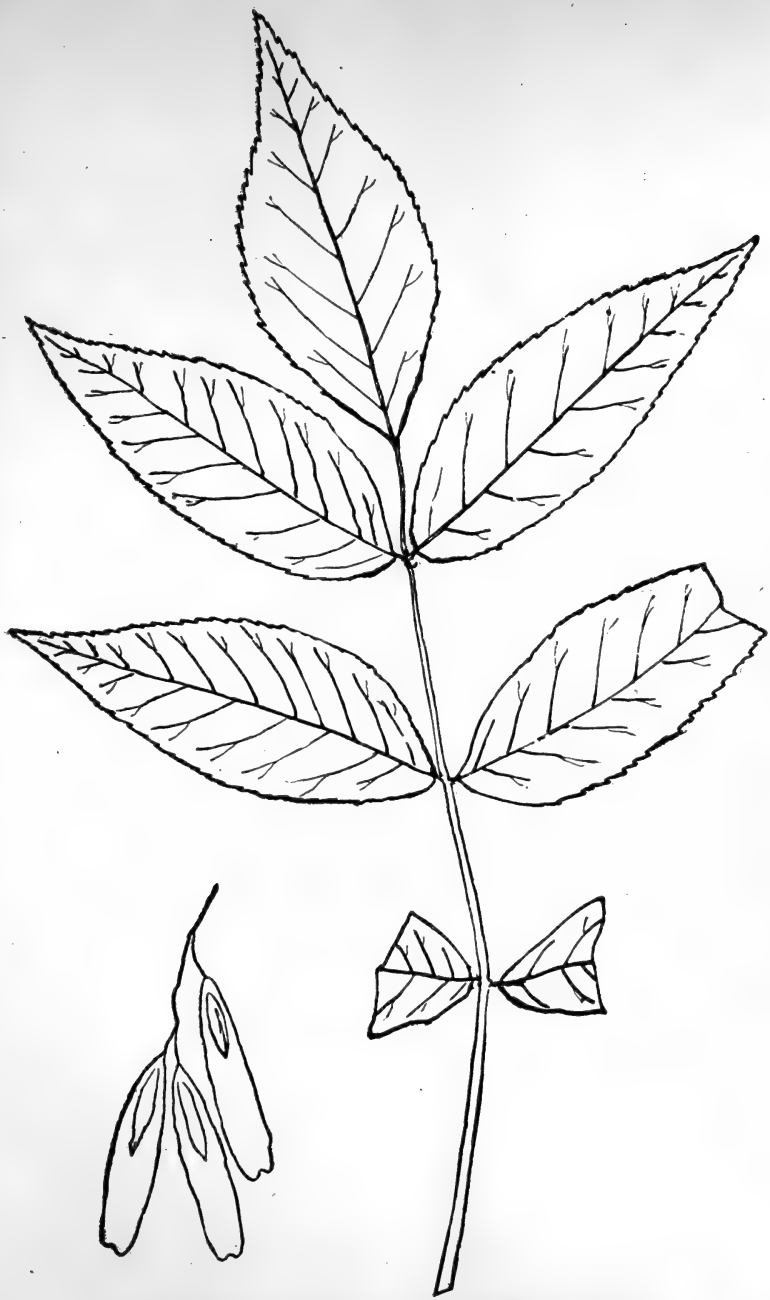


Fig. 113.—Blue Ash. (F. quadrangulàta, Michx.)
LEAF AND FRUIT REDUCED ONE THIRD.

Fig. 114.—Black Ash, Water Ash, Hoop Ash. *F. sambucifolia. Lam.*

Leaves, COMPOUND (odd-feathered; leaflets, seven to eleven, usually nine); OPPOSITE; EDGE OF LEAFLET TOOTHED.

Outline of leaflet, narrow, long oval or long egg-shape. *Apex*, taper-pointed. *Base*, rounded.

Leaf-stem, smooth, somewhat flattened or channelled, and with *sharp edges* above the leaflets.

Leaflet-stem, lacking.

Leaf-bud, deep blue or *blackish.*

Leaflet, three to five inches long, smooth and green on both sides, excepting where it is slightly hairy along the lower part of the middle rib. When crushed it has an Elder-like odor.

Bark of trunk, dark granite-gray, somewhat furrowed and broken up and down with roughnesses, which continue in the old tree. The young branches are smooth and grayish and marked with black and white dots and warts.

Winged *seeds* nearly one and one half inches long, with the wing three eighths of an inch wide and *extending around the seed.* Ripe in July.

Found, along low river-banks and in swamps, which it sometimes fills; in Delaware, the mountains of Virginia, Northwestern Arkansas, through the Northern States to Canada. It is the most Northern of the American Ashes.

Usually a small or medium-sized tree. The wood is largely used for barrel-hoops, baskets, in cabinet-work, and interior finish.

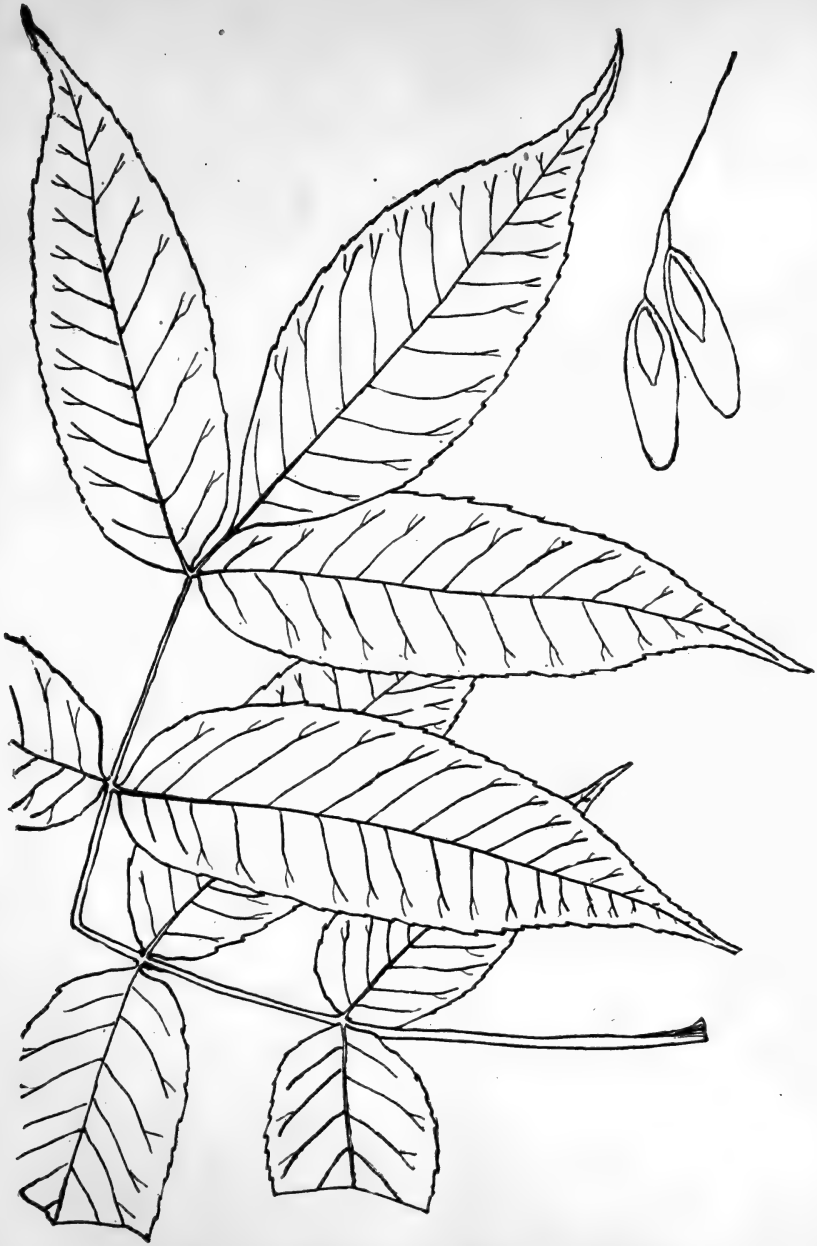


Fig. 114.—Black Ash. (F. sambucifòlia, Lam.)
LEAF AND FRUIT REDUCED ONE THIRD.

TREES WITH COMPOUND LEAVES

(HAND-SHAPED)

LEAVES OPPOSITE

(EDGE TOOTHED)

F I

Genus ÆSCULUS, L. (Buckeye, Horse Chestnut.)

Fig. 115.—Sweet Buckeye, Big Buckeye. *Æ. flava, Ait.*

Leaves, COMPOUND (hand-shaped; leaflets, usually five, sometimes seven); OPPOSITE; EDGE TOOTHED.

Outline of leaflet, long oval, long egg-shape, or long reverse egg-shape. *Apex*, taper-pointed. *Base*, pointed.

Leaflet, four to nine inches long, one to three inches wide, usually minutely downy beneath.

Flowers, pale yellow. April, May.

Fruit, two to two and one half inches in diameter, rounded. *Husk, not prickly*, but uneven. *Nut*, one or two in a husk, large and brown.

Found, from Alleghany County, Pennsylvania, southward along the Alleghany Mountains to Northern Georgia and Alabama, and westward.

A tree thirty to seventy feet high. Its wood is light and hard to split. With the other species of the same genus it is preferred, above any other American wood, for the making of artificial limbs.

Fig. 115.—Sweet Buckeye. (Æ. flava, Ait.)
REDUCED ONE THIRD.

Fig. 116.—Ohio Buckeye, Fetid Buckeye. *Æ. glabra, Willd. Æ. Ohioènsis, Michaux.*

Leaves, COMPOUND (hand-shaped; leaflets, five); OPPOSITE; EDGE TOOTHED.

Outline of leaflet, oval or long oval. *Apex*, taper-pointed. *Base*, pointed.

Leaflets, three to seven inches long; one and a half to three inches wide.

Bark, with a disagreeable odor.

Flowers, small, yellowish-white. June.

Fruit, about three fourths of an inch in diameter. *Husk*, *prickly* when young. *Nut*, smooth.

Found, along the western slopes of the Alleghany Mountains—Pennsylvania to Northern Alabama and westward.

A small, ill-scented tree (eighteen to thirty-five feet high), with wood in quality and use much like that of the Sweet Buckeye.

Horse Chestnut. [*Æ. Hippocàstanum, L.*]

A very common introduced and cultivated species, native in Northern India.

Leaflets, five to seven (usually seven), with ribs straight, and brown-woolly when young.

Flowers, at the ends of the branches; large; in large, upright, pyramid-shaped clusters; cream-white, spotted with yellow and purple. May, June.

Fruit, large. *Husk*, with stiff prickles. *Nut*, mahogany-colored, with a large, round, whitish scar; bitter, and said to be somewhat poisonous.

A compact, rounded tree, of medium size; very ornamental when in flower. Its bark has been used as a substitute for cinchona bark in the treatment of intermittent fevers.

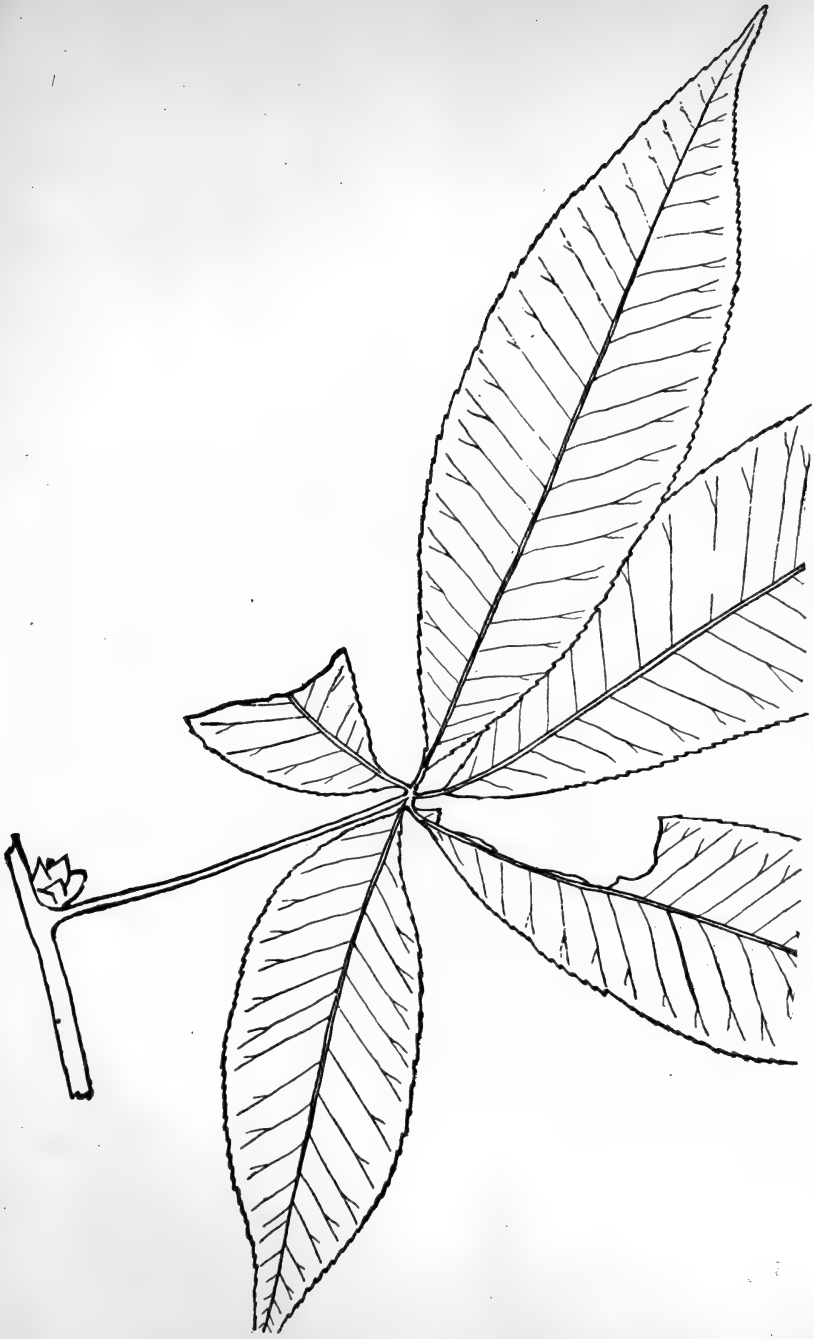


Fig. 116.—Ohio Buckeye. (Æ. glabra, Willd.)
REDUCED ONE THIRD.

I tarried there that day ; I worshipped there,—
For in that forest God seemed everywhere.
And when the shining day was wholly done
And twilight's peaceful hours were well begun,
I homeward bore the forest's loving words
That filled my heart like melodies of birds
And seemed God's benediction from above,—
Those woodland gladsome messages of love.

—From *The Trees.*

EXPLANATION OF TERMS

EXPLANATION OF TERMS.

I.

TREES, as distinguished from shrubs, are those species which, as the rule, spring from the ground with a single, branching trunk.

II.

A LEAF is :

(1) *Simple*, when it is of one piece. (Fig. *a*, Willow Oak.)

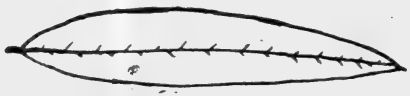


FIG. 7.

(2) *Compound*, when there are two or more entirely separate pieces (called *leaflets*) on the one leaf-stem. (Figs. *b* and *c*, Dwarf Sumach and Horse Chestnut.) See note 2.

COMPOUND LEAVES are :

(1) *Feather-shaped*, when the leaflets are placed along the sides of the leaf-stem. (Fig. *b*.)

(When the compound leaf ends with a pair of leaflets it is *even-feathered;* when it ends with one leaflet it is *odd-feathered.*)

(2) *Hand-shaped*, when all the leaflets radiate from the end of the leaf-stem, like fingers from the palm of the hand. (Fig. *c*.)

NOTE 1.—Compound leaves may be once, twice, or three times compound.

NOTE 2.—The leaflets of a compound leaf can be distinguished from a simple leaf by the absence of leaf-buds from the base of their stems.

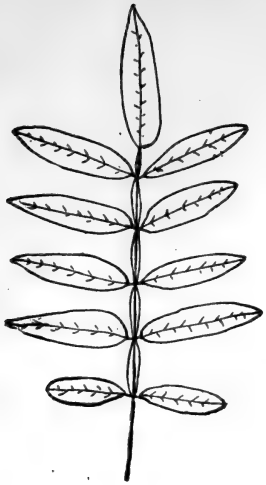


FIG. *b*.

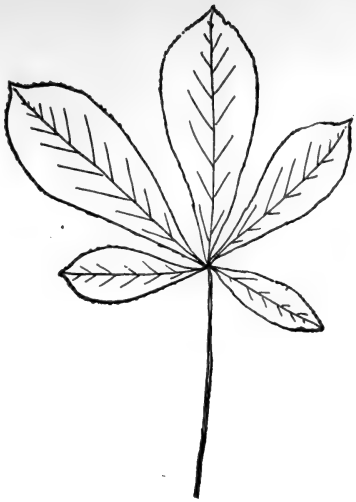


FIG. *c*.

III.

The EDGE of the leaf is:

(1) *Entire*, when it is an even line, without indentations.

(2) *Toothed*, when it is set with an indefinite number of sharp or blunt teeth. (Fig. *d*.)

FIG. *d*.

(3) *Lobed*, when the indentations are deep and of a definite number. (Figs. *e*, *f*, and *g*, Oaks and Poplar.)

IV.

THE SHAPE OF THE WHOLE LEAF.—The leaf is:

(1) *Needle- or line-shaped*, when it is very narrow (sometimes no more than a line), and of about the same width throughout. (Fig. *h*, Pine.)

FIG. *e.* FIG. *f.* FIG. *g.*

(2) *Lance-shaped*, when it is much longer than wide, and gradually tapering to a point. (Fig. *i*, Willow.)

FIG. *h.* FIG. *i.*

(3) *Inversely lance-shaped*, when gradually tapering down instead of up.

(4) *Egg-shaped*, when it is the shape of an egg, with the broadest part below the middle, but without regard to the base and apex. (Fig. *j*, Dogwood.)

(5) *Inversely egg-shaped*, when it is the shape of an egg, but with the broadest part above the middle.

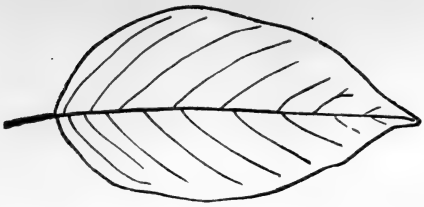


FIG. *j*.

(6) *Oval*, when shaped much like an egg, but with the broadest part at the middle. (Fig. *k*, Beech.)

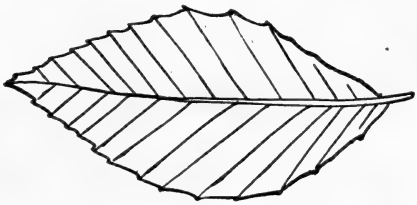


FIG. *k*.

(7) *Rounded*, when round or nearly so.

NOTE.—If the leaf is lobed its "shape" is found by filling out the space between the lobes.

V.

The APEX of the leaf is :

(1) *Pointed*. (Fig. *l*.)

(2) *Taper-pointed*, when the leaf *gradually* tapers to a point. (Fig. *m*.)

(3) *Bristle-pointed*, when it terminates with a bristle. (Fig. *n*.)

FIG. *l*. FIG. *m*. FIG. *n*.

(4) *Scythe-shaped*, when the tapering end curves like a scythe. (Fig. *o*.)

(5) *Blunt*, or *rounded*, when the end is evenly curved. (Fig. *p*.)

(6) *Hollowed*, when the end is more or less hollowed or notched. (Fig. *q*.)

FIG. *o*. FIG. *p*. FIG. *q*.

VI.

The BASE of the leaf is :

(1) *Squared*, when it is cut nearly or quite straight across. (Fig. *r*.)

(2) *Rounded*. (Fig. *s*.)

(3) *Pointed*. (Fig. *t*.)

(4) *Wedge-shaped*, when it tapers to a point by straight lines. (Fig. *u*.)

(5) *Heart-shaped*, when the edge is turned in at the base, forming a notch or bend. (Fig. *v*.)

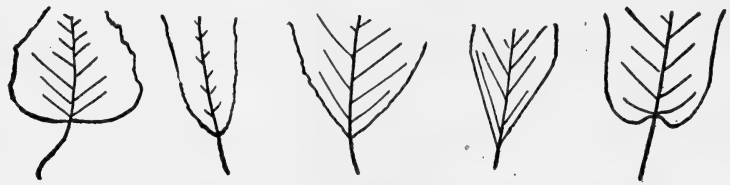


FIG. *r*. FIG. *s*. FIG. *t*. FIG. *u*. FIG. *v*.

VII.

ARRANGEMENT OF LEAVES ON THE BRANCH.—Leaves are :

(1) *Alternate*, when they follow one another upon different sides of the branch. (Elm, Walnut.)

(2) *Opposite*, when they are in pairs, and upon opposite sides of the branch. (Maple, Ash.)

(3) *Indeterminate*, when they are closely crowded, either in bunches (Pine, Larch), or singly up and down the branches. (Spruce, Arbor Vitæ.)

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THE SHRUBS

OF

NORTHEASTERN AMERICA

BY

CHARLES S. NEWHALL.

FIFTH IMPRESSION

THE SHRUBS.

'T is true, among the brotherhood
Of regal trees that hold their place
Like sceptred kings, you have no rank,
Dear children of the humbler race.

Instead you ever seem to stand
In mute appeal for love and care,
With offered gifts of grace and bloom,
In lowly places everywhere.

But, children of the humbler race,
'T is therefor that we give you praise.
You give your souls (your flowers), and we
Our love, through all the changing days.

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PREFACE.

I.

"C——, now that you have finished your book about the trees, I wish you would make another, this time about our native shrubs."

"Why?"

"Partly because I want to know the shrubs as I have learned to know the trees, and partly for another reason. You remember the little place I have in the country?"

"Yes, a pretty place that could be made prettier."

"Well, I had thought of finding a gardener and telling him to stock it as he chose, but I have a fancy that the result would be better every way if I and the children were to search the woods and so stock it for ourselves."

"And you want me to help you in your miniature landscape gardening."

"I want you to help me to know all our shrubs, and among them to know the best for the garden and the lawn. Will you?"

"Yes."

II.

In the introduction to *The Trees of Northeastern America*, I referred to the interest which one who visits

the woods often takes in personal fellowship with the individual trees. He is not satisfied to pass through a forest or a field as one might walk the streets of a crowded city—unacquainted. His mood is friendly; therefore he is pleased when by any chance he can know the trees as friends, in their home life, intimately and by name.

One has a similar feeling toward the humbler company of the shrubs.

As I undertook the pleasant work of introduction between the many who have no technical botanical knowledge and my friend the trees, now I do the same for them and my friends the shrubs.

III.

The shrubs described in the following pages are those which are found native in Canada and the United States east of the Mississippi River and north of the latitude of Southern Pennsylvania. With these are described the more important of the introduced and naturalized species.

The woody vines of the section are not included. They are reserved for another volume.

I am glad to acknowledge my obligations to Dr. Thomas Morong, and again to Professor N. L. Britton of Columbia College. Professor Britton has very kindly revised the nomenclature of the shrubs. For the localities I have chiefly followed Gray and Wood. I am indebted also to the works of Torrey, Emerson, Millspaugh, Meehan, and others.

LIST OF FAMILIES AND OF GENERA.

Family 1. RANUNCULÀCEÆ (Crowfoot Fam.)	Genus Xanthorhìza (Shrub Yellow-root.
Family 2. MAGNOLIÀCEÆ (Magnolia Fam.)	Genus Magnòlia (Magnolia).
Family 3. ANONÀCEÆ (Papaw Fam.)	Genus Asímina (Papaw).
Family 4. BERBERIDÀCEÆ (Barberry Fam.)	Genus Bérberis (Barberry).
Family 5. CISTÀCEÆ (Rock-rose Fam.)	Genus Hudsònia (Hudsonia).
Family 6. HYPERICÀCEÆ (St.-John's-wort Fam.)	Genus Aścyrum (St.-Peter's-wort).
	Genus Hypéricum (St.-John's-wort).
Family 7. RUTÀCEÆ (Rue Fam.)	Genus Xanthóxylum (Prickly Ash).
	Genus Ptélea (Shrubby Trefoil).
Family 8. ILICÍNEÆ (Holly Fam.)	Genus Ìlex (Holly, etc.).
	Genus Nemopánthes (Mt. Holly).
Family 9. CELASTRÀCEÆ (Staff-tree Fam.)	Genus Euónymus (Burning-Bush.)
Family 10. RHAMNÀCEÆ (Buckthorn Fam.)	Genus Rhamnus (Buckthorns).
	Genus Ceanòthus (New Jersey Tea, etc.).
Family 11. SAPINDÀCEÆ	Genus Acer (Maple).
	Genus Staphylèa (Bladdernut).
Family 12. ANACARDIÀCEÆ (Sumach Fam.)	Genus Rhus (Sumachs).
Family 13. LEGUMINÒSÆ (Pulse Fam.)	Genus Amórpha (False Indigo).

Family 14. Rosàceæ (Rose Fam.)	Genus Prunus (Plum, Cherry).
	Genus Spiræa (Meadow-sweet, etc.).
	Genus Physocárpus (Nine-bark).
	Genus Rùbus (Blackberry, etc.).
	Genus Ròsa (Rose).
	Genus Pỳrus (Chokeberry, etc.).
	Genus Cratægus (Thorn, Haw).
	Genus Amelánchior (Juneberry).
Family 15. Calycanthàceæ (Calycanthus Fam.)	Genus Calycánthus (Sweet-scented Shrub).
Family 16. Saxifragàceæ (Saxifrage Fam.)	Génus Hydrángea.
	Genus Ítea.
	Genus Rìbes (Currant, etc.).
Family 17. Hamamelídeæ (Witch Hazel Fam.)	Genus Hamámelis (Witch Hazel).
Family 18. Araliàceæ (Ginseng Fam.)	Genus Aràlia (Angelica Tree).
Family 19. Cornàceæ (Dogwood Fam.)	Genus Cornus (Dogwoods or Cornels).
Family 20. Caprifoliàceæ (Honeysuckle Fam.)	Genus Sambùcus (Elders).
	Genus Vibúrnum (Arrow-woods, etc.).
	Genus Symphoricárpos (Snowberry, etc.).
	Genus Lonicèra (Fly-Honeysuckles).
	Genus Diervílla (Bush Honeysuckle).
Family 21. Rubiàceæ (Madder Fam.)	Genus Cephalánthus (Button-bush).
Family 22. Compósitæ (Composite Fam.)	Genus Báccharis (Groundsel Tree).
	Genus Ìva, L. (Marsh Elder).
Family 23. Ericàceæ (Heath Fam.)	Genus Gaylussàcia (Huckleberry).

Family 23. ERICÀCEÆ (Heath Fam.)—*Continued.*	Genus Vaccínium (Blueberry, etc.).
	Genus Andrómeda.
	Genus Leucòthoë.
	Genus Cassándra.
	Genus Kálmia (Laurels, etc.).
	Genus Menzièsia.
	Genus Rhododéndron (Azaleas, etc.).
	Genus Ledum (Labrador Tea).
	Genus Clethra (Sweet Pepper-bush).
Family 24. OLEÀCEÆ (Olive Fam.)	Genus Chionánthus (Fringe Tree).
	Genus Ligústrum (Privet).
Family 25. LAURÀCEÆ (Laurel Fam.)	Genus Líndera (Spice-bush).
Family 26. THYMELÀCEÆ (Daphne Fam.)	Genus Dírca (Leatherwood).
	Genus Dáphne (Mezèreum).
Family 27. ELÆAGNÀCEÆ (Oleaster Fam.)	Genus Shephérdia.
Family 28. LORANTHÀCEÆ (Mistletoe Fam.)	Genus Phoradéndron (Am. Mistletoe).
Family 29. SANTALÀCEÆ (Sandalwood Fam.)	Genus Pyrulària (Oil-nut).
Family 30. MYRICÀCEÆ (Sweet-Gale Fam.)	Genus Myrìca (Bayberry, etc.).
Family 31. CUPULÍFERÆ (Oak, etc., Fam.)	Genus Bétula (Birches).
	Genus Álnus (Alders).
	Genus Córylus (Hazel-nuts).
	Genus Carpìnus (Hornbeam).
	Genus Qúercus (Oaks).
	Genus Castànea (Dwarf Chestnut).
Family 32. SALICÀCEÆ (Willow Fam.)	Genus Sàlix (Willows).
Family 33. EMPETRÀCEÆ (Crow-berry Fam.)	Genus Corèma (Broom Crow-berry).
	Genus Émpetrum (Black Crow-berry).
Family 34. CONÍFERÆ (Pine Fam.)	Genus Juníperus (Juniper).
	Genus Taxus (Am. Yew).

DIRECTIONS.

NOTE 1. The place of any given specimen can be readily found by help of one or more of the three "Guides" given on pages 1 to 10.

The first Guide is arranged for use with the flowers; the second, with the leaves; the third, with the fruit. Which of the three can be used to the best advantage will depend upon the time of year.

The descriptions are scientific but not technical.

NOTE 2. In describing a species, the general items that have been given under the genus or the family to which the species belongs are not usually repeated.

NOTE 3. In using the Leaf Guide and the leaf illustrations it should be remembered that leaves from vigorous young sprouts are not usually the best specimens. It is seldom that two leaves, even upon the same mature plant, exactly agree, but they follow the type, while often the younger growth varies from it.

NOTE 4. Those species are considered shrubs (in distinction from trees) which, as the rule, do not spring from the ground with a single branching trunk.

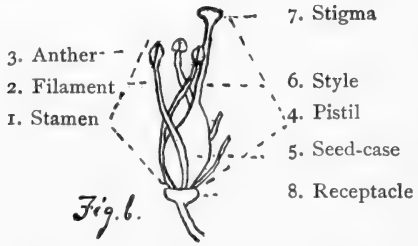
NOTE 5. Signs used: A grave accent (ˋ) over a vowel indicates that it is accented and long. An acute accent (ˊ) over a vowel indicates that it is accented and short.

Names enclosed in brackets indicate that the shrub is not native.

GUIDE I.

FLOWERS.

Corolla ("crown") = the circle of petals.



Calyx ("cup") = the circle of sepals.

For further explanation of terms see Glossary, page 240.

CLASS FIRST.—Young seeds enclosed in a seed-case (Angiospérmæ), including all shrubs excepting those of the Pine Family.

DIVISION I. Sepals and petals both present, the latter not united into one piece (Polypetalous).

A. Stamens numerous, at least more than ten.

1. Sepals attached below the seed-case or cases.

(*a*) Seed-cases numerous, but clinging together in a solid mass on a lengthened receptacle. Blossoms one and one-half inches or more across. Petals and sepals colored alike. Sweet-Bay in Magnolia Fam. No. 2 (Magnoliàceæ), page 36.

(*a*) Seed-cases numerous, separate, concealed in an urn-shaped or cup-shaped receptacle.

(*b*) Leaves opposite, entire. Calycanthus Fam. No. 15 (Calycanthàceæ) page 110.

(*b*) Leaves alternate, toothed. The Rose in Rose Fam. No. 14 (Rosàceæ), page 96.

(*a*) Seed-cases more than one, separate, not enclosed in the receptacle. Rose Fam. (in part) No. 14 (Rosàceæ), page 80, *seq.*

(*a*) Pistil, one.

(*b*) Flowers yellowish; leaves opposite, edge entire, dotted (under a lens). St.-John's-wort Fam. No. 6 (Hypericàceæ), page 44.

(*b*) Flowers white or pinkish; leaves alternate, toothed. Plums and Cherries in Rose Fam. No. 14 (Rosàceæ), pages 80–84.

(*b*) Flowers bright-yellow, small, lasting only a day; leaves crowded, scale-like or awl-shaped, downy. Hudsonia in Rock-Rose Fam. No. 5 (Cistàceæ), page 42.

2. Sepals attached to the seed-case.

(*a*) Seed-case ten-celled, with one seed in each cell. Shadbush in Rose Fam. No. 14 (Rosàceæ), page 108.

(*a*) Seed-case two- to five-celled. Chokeberry and Haw in Rose Fam. No. 14 (Rosàceæ), pages 100–104.

B. Stamens of the same number as the petals, and opposite to them.

(*a*) Flowers yellow; seed-case with one cell. Barberry Fam. No. 4 (Berberidàceæ) page 38.

(*a*) Flowers greenish; seed-case with two to four cells. Buckthorn Fam. No. 10 (Rhamnàceæ), page 61.

C. Stamens, not more than twice as many as the petals; when of just the number, alternate with them.

1. Sepals attached below the seed-case or cases.

(*a*) Seed-cases, two or more, separate.

(*b*) Stamens attached to the receptacle.

(*c*) Flowers greenish or whitish. Rue Fam. No. 7 (Rutàceæ), page 47.

(*c*) Flowers brownish-purple. Crowfoot Fam. No. 1 (Ranunculàceæ), page 34.

(*b*) Stamens attached to the sepals. Spiræa in Rose Fam. No. 14 (Rosàceæ), page 86.

(*a*) Seed-case, one.

(*b*) Seed-case with one cell.

(*c*) Petal, only one; flowers violet or purple. False Indigo in Pulse Fam. No. 13 (Leguminòsæ), page 78.

(*c*) Petals, five and equal; flowers greenish-white or yellowish; seed, one. Sumach Fam. No. 12 (Anacardiàceæ), page 70.

(*c*) Petals, five and equal, but lasting only for a day; flowers light-yellow; seeds, several. Hudsonia in Rock-Rose Fam. No. 5 (Cistàceæ), page 42.

(*c*) Petals, five and equal; flowers white; seeds, several. Ítea in Saxifrage Fam. No. 16 (Saxifragàceæ), page 112.

(*b*) Seed-case with two to several cells.

(*c*) Flowers irregular. Rhododendron in Heath Fam. No. 23 (Ericàceæ), page 178.

(*c*) Flowers regular.

(*d*) Stamens, two (early, three or four); petals, four, barely united at base. Fringe Tree in Olive Fam. No. 24 (Oleàceæ), page 190.

(*d*) Stamens more numerous than the petals. Maple in Soapberry Fam. No. 11 (Sapindàceæ), page 66.

(*d*) Stamens just as many or twice as many as the petals.

(*e*) Seeds, only one or two in each cell.

(*f*) Leaves compound, of three leaflets. Hop Tree in Rue Fam. No. 7 (Rutàceæ), page 50.

(*f*) Leaves simple.

(*g*) Sepals not minute. Euónymus in Staff-Tree Fam. No. 9 (Celastràceæ), page 58.

(*g*) Sepals minute. Holly Fam. No. 8 (Ilicíneæ), page 50.

(*e*) Seeds, several or many in each cell.

(*f*) Leaves compound and opposite. Bladder-Nut in Soapberry Fam. No. 11 (Sapindàceæ), page 68.

(*f*) Leaves simple, alternate.

(*g*) Edge entire. Lèdum in Heath Fam. No. 23 (Ericàceæ), page 186.

(*g*) Edge-toothed. Cléthra in Heath Fam. No. 23 (Ericàceæ), page 188.

2. Sepals attached to the seed-case.

(*a*) Young seeds, more than one in each cell.

(*b*) Seed-case with one cell; leaves alternate. Currant and Gooseberry in Saxifrage Fam. No. 16 (Saxifragàceæ), page 114.

(*b*) Seed-case with two to several cells; leaves opposite.

(*c*) Petals rounded; stamens, four to five, very short. Spindle-Tree in Staff-Tree Fam. No. 9 (Celastràceæ), page 58.

(*c*) Petals egg-shape; stamens, eight to ten, slender. Hydrángea in Saxifrage Fam. No. 16 (Saxifragàceæ), page 111.

(*a*) Young seeds, only one in each cell.

(*b*) Stamens, ten or five; leaves simple. Cratægus in Rose Fam. No. 14 (Rosàceæ), page 103.

(*b*) Stamens, four; flowers dark-purple. Spindle-Tree in Staff-Tree Fam. No. 9 (Celastràceæ), page 58

(*b*) Perfect stamens, four; flowers yellow. Witch-Hazel Fam. No. 17 (Hamamelídeæ), page 118.

(*b*) Stamens, four; flowers white. Dogwood Fam. No. 19 (Cornàceæ), page 124.

(*b*) Stamens, five; leaves compound. Angelica Tree in Ginseng Fam. No. 18 (Araliàceæ), page 122.

DIVISION II. Sepals and petals both present; the latter more or less united into one piece (Gamopetalous).

A. Stamens more numerous than the united petals. Heath Fam. No. 23 (Ericàceæ), page 155.

B. Stamens of the same number as the united petals, and alternate with them, or fewer.

1. Sepals attached to the seed-case.

(*a*) Flowers in few- to many-blossomed heads, tubular, some with stamens only, others with pistils only; leaves alternate, or, in Iva, the lower ones opposite. Iva and Groundsel Tree in Composite Fam. No. 22 (Compósitæ), page 154.

(*a*) Flowers not crowded in round balls; leaves opposite. Honeysuckle Fam. No. 20 (Caprifoliàceæ), page 130.

(*a*) Flowers crowded in round balls; leaves opposite. Button-bush in Madder Fam. No. 21 (Rubiàceæ), page 152.

2. Sepals not attached to the seed-case.

(*a*) Corolla somewhat irregular. Rhododendron in Heath Fam. No. 23 (Ericàceæ), page 178.

(*a*) Corolla regular.

(*b*) Stamens of the same number as the united petals.

(*c*) Stamens free from the petals but inserted with them; style one. Heath Fam. No. 23 (Ericàceæ), page 155.

(*c*) Stamens attached to the base of the barely united petals; style none or very short. Holly Fam. No. 8 (Ilicíneæ), page 50.

(*b*) Stamens fewer than the four barely united, strap-like petals (rarely of the same number). Fringe Tree in Olive Fam. No. 24 (Oleàceæ), page 190.

DIVISION III. Petals (and sometimes sepals) wanting (apetalous).

A. Flowers not in slender, drooping, and scaly clusters, nor in scaly heads.

(*a*) Seed-cases three to five and separate. Prickly Ash in Rue Fam. No. 7 (Rutàceæ), page 47.

(*a*) Seed-case one.

(*b*) Sepals attached to the seed-case.

(*c*) Parasitic on the branches of trees. Mistletoe Fam. No. 28 (Loranthàceæ), page 199.

(*c*) Not parasitic; flowers small, greenish, in short spikes. Oil-Nut in Sandalwood Fam. No. 29 (Santalàceæ), page 200.

(*b*) Sepals not attached to the seed-case, but surrounding it; flowers small yellowish; leaves scurfy. Shephérdia in Oleaster Fam. No. 27 (Elæagnàceæ), page 198.

(*b*) Sepals sometimes wanting; when present plainly not attached to the seed-case.

(*c*) Young seeds, two in each cell. Maple in Soapberry Fam. No. 11 (Sapindàceæ), page 66.

(*c*) Young seeds, one in each cell.

(*d*) Cells of seed-case three to nine; leaves narrow. heath-like. Crow-Berry Fam. No. 33 (Empetràceæ), page 226.

(*d*) Cells of seed-case three; leaves broad. Buckthorn Fam. No. 10 (Rhamnàceæ), page 61.

(*d*) Cells of seed-case one.

(*e*) Flowers light-yellow; three or four in a simple cluster. Leatherwood in Daphne Fam. No. 26 (Thymelàceæ), page 196.

(*e*) Flowers light-yellow, many in a compound cluster. Spice-bush in Laurel Fam. No. 25 (Lauràceæ), page 194.

B. Flowers in slender, drooping, and scaly clusters, or in scaly heads, and of two sorts, with stamens only (staminate), and with pistils only (pistillate).

(*a*) Seed-cases two- to seven-celled, with one or two young seeds in each cell; in fruit one-celled and one-seeded; staminate flowers mostly in slender, drooping, and scaly clusters. Oak Fam. No. 31 (Cupulíferæ) page 206.

(*a*) Seed-case one-celled with many young seeds; in fruit one-celled and many-seeded; staminate and pistillate flowers mostly in lengthened and scaly clusters. Willow Fam. No. 32 (Salicàceæ), page 220.

(*a*) Seed-case one-celled, with one young seed; staminate and pistillate flowers mostly in scaly heads; leaves fragrant when crushed. Sweet-Gale Fam. No. 30 (Myricàceæ) page 202.

CLASS SECOND.—Young seeds not enclosed in seed-cases; (Gymnospérmæ); leaves needle-shaped or line-like. Juniper and Yew in Pine Fam. No. 34 (Coníferæ) pages 230, 232.

GUIDE II.

LEAVES.

A. Leaves simple.*

I. Alternate.

(*a*) Edge entire. Go to 1.

(*a*) " toothed. Go to 2.

(*a*) " lobed.

(*b*) Lobes entire. Go to 3.

(*b*) " toothed. Go to 4.

II. Opposite.

(*a*) Edge entire. Go to 5.

(*a*) " toothed. Go to 6.

(*a*) " lobed.

(*b*) Lobes entire. Go to 7.

(*b*) " toothed. Go to 8.

III. Indeterminate (because of smallness or closeness). **Go to 9.**

B. Leaves compound.

I. Feather-shaped.

(*a*) Alternate.

(*b*) Edge of leaflets entire. Go to 10.

(*b*) " " toothed. Go to 11.

(*a*) Opposite.

(*b*) Edge of leaflets entire. Go to 12.

(*b*) " " toothed. Go to 13.

II. Hand-shaped. Go to 14.

* The leaflets of a compound leaf can be distinguished from a simple leaf by the absence of leaf-buds from the base of their stems.

GUIDE II.

LEAVES—*Continued.*

NOTE.—Names in *italics* are also given elsewhere under the more frequent form.

1

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Papaw, page 38.
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Cornel, alternate leaves, page 127.
Groundsel Tree, page 154.
Genus Gaylussàcia (Huckleberries and Dangleberries), excepting Box Huckleberry, page 204.
Genus Vaccínium (Blueberries and Bilberries), excepting Dwarf Blueberry and some Bilberries, page 162.
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Daphne, page 198.
Shepherdia, page 198.
Buffalo-Nut, page 200.
Bayberry, page 202.
Willows in part, page 220.

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Mt. Holly, page 56.
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New Jersey Tea (strongly three-ribbed), page 64
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Genus Spiràea (Spiræas), page 86.
Genus Pỳrus (Chokeberry, etc.), page 100.
Genus Cratæ̀gus in part (Thorns), page 104.
Genus Amelánchier (Shad-bush), page 108.
Itea, page 112.
Witch-Hazel (teeth large and rounded), page 118.
Groundsel Tree (teeth large and remote), page 154.
Dwarf Huckleberry, page 158.
Box Huckleberry, page 159.
Dwarf Blueberry and var., page 162.
Low Blueberry, page 163.
Some Bilberries, page 164.
Privet Andrómeda, page 169.
Leucòthoë, page 169.
Leather-Leaf, page 171.
Sweet Pepper-Bush, page 188.
Spice-Bush, page 194.
Genus Myrìca (Sweet Fern, etc., foliage fragrant), page 205.

Family Cupulíferæ (Birch, Alder, Hazel-nut, Hornbeam, Oak, Chestnut), except Bear Oak, page 206.
Willows in part, page 220.

3

Oak, Bear, page 218.

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Nine-bark, page 88.
Raspberry, Flowering, page 90.
Genus Cratæ̀gus (in part Thorns), page 104.
Genus Rìbes (Gooseberries), page 114.

5

St.-John's-worts (leaves minutely dotted) page 44.
Genus Córnus (Cornels) excepting C. alternifòlia, page 126.
Vibúrnum nùdum, page 140.
" cassinòides, page 142.
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Wolfberry, page 144.
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Genus Lonicèra (Honeysuckles), page 148
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Genus Kàlmia (Laurels), page 174.
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Privet, page 190.
Mistletoe, page 199.
Juniper (in threes, needle-like), page 230

6

Burning-Bush, page 58.
Strawberry-Bush, page 60.
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Hobble-Bush, page 134.
Genus Vibúrnum, in part (Downy Vibúrnum, Arrow-wood, Soft Vibúrnum, Black Haw, *V. nùdum*, *V. cassinòides*), page 140.
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7

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8

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9

Hudsonias, page 42.
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10

Prickly Ash, page 47.
Trefoil Shrubby, page 50.
Ivy, Poison, page 76.
Indigo, False, page 78.
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Sumachs, page 70.
Ivy Poison, page 76.

Genus Rùbus (Raspberries, Blackberries, etc.), except Flowering Raspberry, page 92.
Genus Ròsa (Rose), page 98.
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13

Bladder-Nut (three leaflets), page 68.
Elders, page 130.

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GUIDE III.

FRUIT.

CLASS I.—Fruit releasing the ripened seed by decaying:

A. Fleshy or pulpy, with one or more seeds.
   (*a*) Seeds, two or more, and in distinct cells (Apple, Shad-bush). A pome. Go to 1.
   (*a*) Seed, one to many, not in distinct cells (Huckleberry). A berry. Go to 2.

B. Fleshy (or sometimes nearly dry), with one or more "stones." A drupe or an etærio.
   (*a*) Solitary, with one or in Papaw with several large stones (Cherry, Papaw). Go to 3.
   (*a*) Solitary, with one to several small stones (Sumach). Go to 4.
   (*a*) Clustered on one receptacle, each drupelet with one small stone (Raspberry). Go to 5.

C. Not fleshy, with one or in the "samara" sometimes two ripened seeds
   (*a*) The coat dry, tipped with the remains of the style, and free from but enclosing its one small seed (Groundsel Tree). An achènium. Go to 6.
   (*a*) The coat, a thin membrane forming a "wing" around or at the sides of the fruit (Trefoil Maple). A samara. Go to 7.
   (*a*) The coat a cup, a wrap, or a scale (Acorn, Hazel-nut, Alder). A glans, a nut, or a nutlet. Go to 8.

CLASS II.—Fruit releasing the ripened seeds by splitting:

(*a*) Splitting on one side, one-celled (Spiræa, Shrub Yellow-Root). A follicle. Go to 9.

(*a*) Splitting on two sides, one-celled, with seeds in one row (False Indigo). A legume. Go to 10.

(*a*) Any form of dry fruit that splits up and down, and is not otherwise named. A capsule. Go to 11.

(*a*) A cone-shaped aggregation of capsules (Sweet-Bay). A cone of capsules. Go to 12.

NOTE.—Names in *italics* are repetitions made because of real or apparent resemblance to the class with which they are placed.

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Barberry (oblong, red, one to few-seeded), page 38.
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Deerberry (many-seeded), page 160.
Bilberries (many-seeded) page 164.
Privet (two to four-seeded) page 190.
Shepherdia (one seed), page 198.
Mistletoe (one seed), page 199.
Yew (red, one seed), page 232.
Juniper (one to three seeds) page 230.

3

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Choke-Cherry, page 84.
Viburnums, page 136.
Fringe-Tree, page 190.
Spice-Bush, page 194.
Leatherwood, page 196.
Daphne, page 198.
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4

Ilexes (stones four to eight), page 54.
Mt. Holly (stones four to five), page 56.

Buckthorns (stones two to three), page 61.
Sumachs (stone one)page 70.
Ivies (stone one) page 76.
Thorns (Cratægus, stones one to five), page 104.
Angelica Tree (stones five), page 122.
Dogwoods (Cornels, stones two), page 126.
Viburnums (stone one), page 134.
Fringe-Tree (stone one), page 190.
Mistletoe (stone one), page 199.
Sweet-Gale (stone one), page 204.
Bayberry (stone one), page 202.
Sweet-Fern (stone one), page 205.
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5

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Roses (apparently a pome), page 80.
Sweet-scented Shrub (apparently a pome), page 110.
Marsh Elder, page 154.
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Shepherdia (apparently a berry), page 198.

7

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8

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10

Hudsonias (two to six-seeded), page 42.
Prickly Ash (one to two-seeded), page 47.
False Indigo (two-seeded), page 78.
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St.-John's-worts (one to five-celled, many-seeded), page 44.
Prickly Ash, (one-celled, one to two-seeded), page 47.
Burning-Bush (three to five-celled, few-seeded), page 58.
Strawberry-Bush (three to five-celled, few-seeded), page 60.
Bladder-Nut (three-celled, three to twelve-seeded), page 68.
New Jersey Tea (three-celled, three-seeded), page 64.
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Wild Hydrangea (two-beaked, two-celled in lower part, many-seeded), page 111.
Itea (two-celled, eight to twelve-seeded), page 112.
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DESCRIPTION OF SHRUBS

(*With Illustrations*)

CLASS FIRST

(*Angiospérmæ*)

Division I

PETALS MOSTLY NOT UNITED

(*Polypétalous*)

1. Family RANUNCULÀCEÆ. (Crowfoot Fam.)

Genus XANTHORHÌZA. (Marshall.)

From two Greek words meaning "yellow" and "root."

Fig. 1.—Shrub Yellow-Root. *X. apiifòlia, L'Her.*

Flowers, small, dark purple, in slender drooping clusters, appearing with the leaves. *Petals*, five, not united, much smaller than the five sepals, slightly two-lobed, raised on a claw. *Stamens*, five to ten. *Seed-cases*, free from the sepals.

Leaves, once or twice compound (odd-feathered). *Leaflets*, three to five, stemless, lobed and toothed, and two to three inches in length.

Bark and Roots, bitter, deep yellow.

Fruit, in clusters, oblong, one-celled, one-seeded; splitting once lengthwise; about one eighth of an inch long; a follicle.

Found, along shady banks of streams in Pennsylvania Southwestern New York, and Kentucky, and southward among the mountains.

A bushy plant, two to three feet high. A yellow dye is made from its roots.

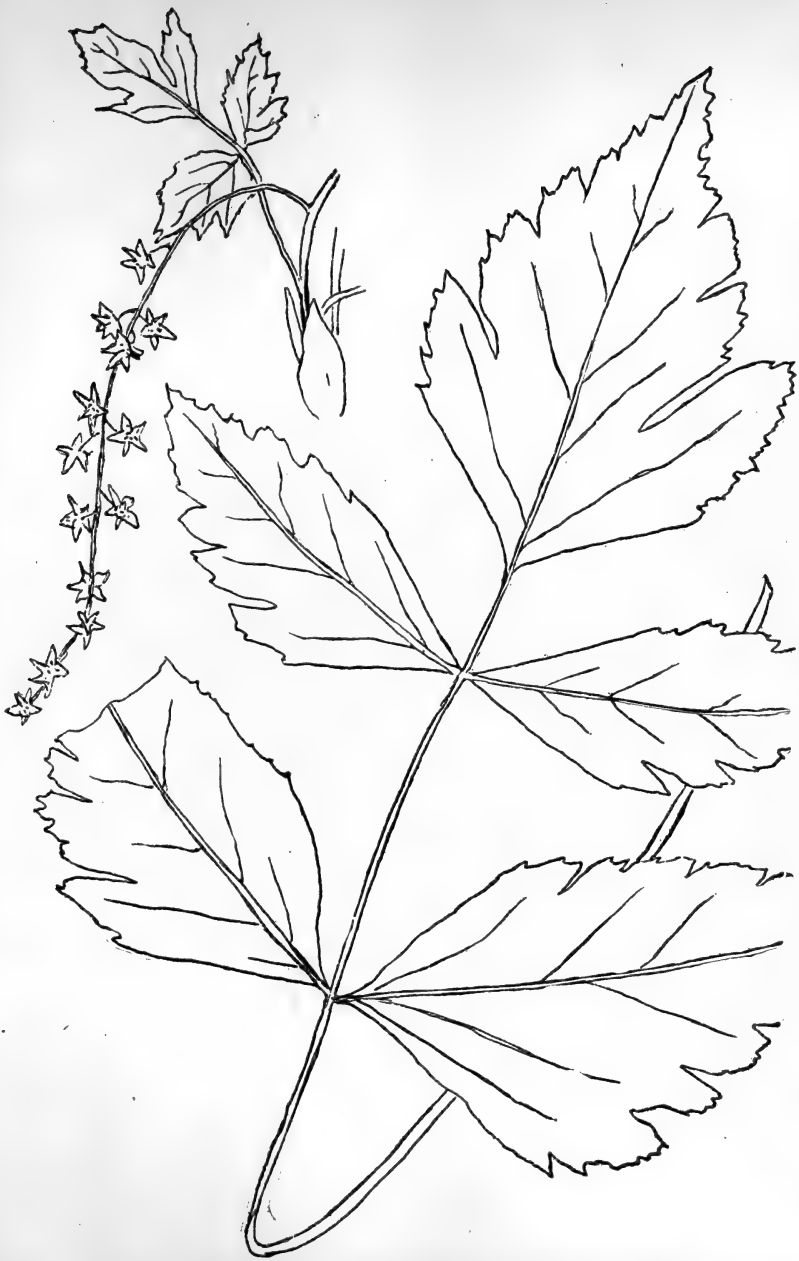


Fig. 1.—Shrub Yellow-Root. (Xanthorhiza apiifolia, L'Her.) Leaf, and spray of flowers with young leaf.

2. Family MAGNOLIÀCEÆ. (Magnolia Fam.)

Genus MAGNÒLIA, L. (Magnolia.)

From "Magnol," the name of a botanist of the 17th century.

Fig. 2.—Sweet-Bay. Swamp Laurel. Small Magnolia.
M. Virginiàna, L. (M. glauca, L.)

Flowers, solitary, at the ends of the branches, two to three inches across, white, very fragrant. *Petals*, six to nine, not united. *Sepals*, three, colored like the petals. *Stamens*, more than ten. *Seed-cases*, many, free from the sepals, mostly clinging together over the lengthened receptacle. June to August.

Leaves, three to six inches long, simple, alternate, edge entire, thick and smooth, dark-green and polished above, white below, the mid-vein green and distinct, the side veins indistinct.

Bark, smoothish, light-gray, aromatic, and bitter.

Fruit, an oblong cone, fleshy or somewhat woody, red. When mature the cells of this "cone" split, and the enclosed bright-red seeds (one or two to each cell) drop out and hang suspended by delicate spiral threads. An aggregation of capsules. September.

Found, in swampy ground, from Massachusetts southward, oftenest near the coast.

A bush, or sometimes a small tree, four to twenty-five feet high. Southward it is often still higher, and its leaves are evergreen. All parts of the bush, as in the other magnolias, have an intensely bitter aromatic juice. "The fresh bark has long been considered as a bitter, aromatic tonic and gentle laxative." "The bark, cones, and seeds have been used medicinally from the time of the aborigines, especially against rheumatism and as an anti-periodic." In wet ground it can be successfully cultivated.

Fig. 2.—Sweet-Bay. (M. Virginiàna, L.) (*a*) Flower. (*b*) Fruit.

3. Family ANONÀCEÆ. (Papaw Fam.)

Genus ASÍMINA, ADAMS. (Papaw.)

Fig. 3.—Papaw Custard-Apple. *A. tríloba (L.), Dunal.*

Flowers, one and a half inches across; dull purple, in drooping clusters, appearing with the leaves. *Petals*, six, thick, in two rows, not united. *Sepals*, three. *Stamens*, numerous in a rounded mass. *Seed-cases*, few, free from the sepals. March, April.

Leaves, simple, alternate, edge entire, five to ten inches long, reverse egg-shape. *Apex*, pointed or sometimes rounded. *Base*, taper-pointed, or slightly rounded; thin, rusty-downy when young, soon becoming smooth and polished.

Bark, silvery-gray, smooth and polished; young shoots downy.

Fruit, about three inches long by one and one half inches thick, egg-shape, yellow, pulpy, about ten-seeded; of disagreeable odor when green; sweet and edible after frost, when it turns black without and within, and becomes in color and consistency almost custard-like. October.

Found, from western New York to Southern Iowa, and southward.

A bush or small tree of unpleasant odor when bruised; densely clothed with long leaves.

4. Family BERBERIDÀCEÆ. (Barberry Fam.)

Genus BÉRBERIS, L. (Barberry.)

From the Arabic name of the fruit.

Fig. 4.—Barberry. *B. vulgàris, L.*

Flowers, yellow, drooping, in many-blossomed clusters. *Petals*, six, not united, reverse egg-shape, concave,

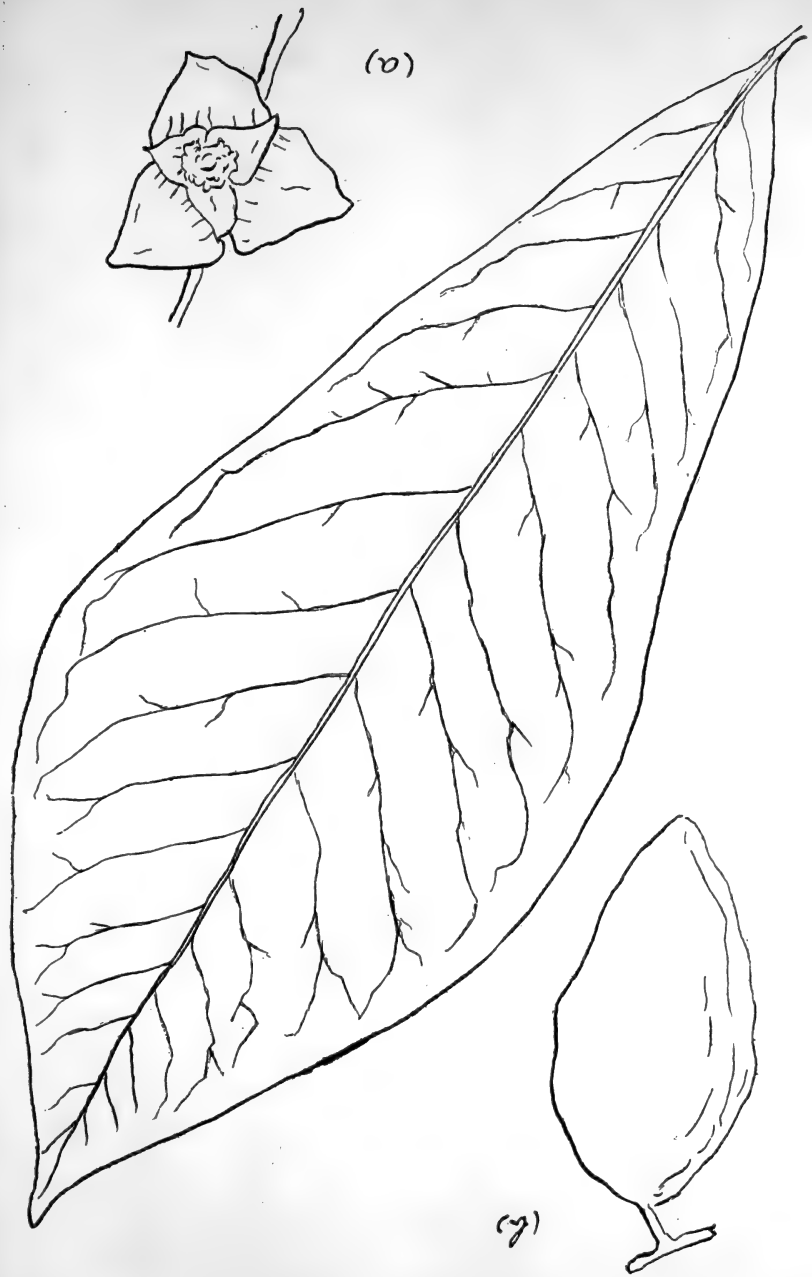


Fig. 3.—Papaw. A. triloba (L.), Dunal.

(*a*) Flower. (*b*) Fruit. two-thirds natural size.

with two glandular spots on the inside of each near the base. *Sepals*, six (with two to six small bracts beneath), rounded, attached beneath the seed-case. *Stamens*, six, irritable, opposite the petals. *Seed-case*, one, free. May, June.

Leaves, simple, alternate or often clustered in rosettes; edge finely toothed, each tooth tipped with a delicate bristle; sour. On the new shoots the leaves often take the form of branching spines.

Wood and inner bark yellow.

Fruit, in drooping clusters, scarlet, oblong, with one to few seeds; edible, but too acid to be agreeable excepting in "preserve"; a berry. September.

Found in thickets in fields and along roadsides; abundantly in New England, where it has become thoroughly naturalized since its introduction from Europe, less commonly elsewhere.

A curious thorny bush, three to eight feet high, with bluish-green foliage, attractive in flower and more attractive in fruit. The bark and roots, used with alum, yield a yellow dye.

In some regions, an old opinion is said still to linger, —that the presence of the barberry causes blight in the grain field.

There is a curious fact reported concerning the flowers which is suggestive of human nerves. When not "doctored," the least touch upon one of their stamens will cause it to spring like a tiny thread of steel, but treat the bush with laudanum or any opiate and the stamens become limp, or with a poison like arsenic and they become rigid, as wholly irresponsive in either case as would be a human nerve.

Fig. 4.—Barberry. (B. vulgàris, L.) (*a*) Fruit.

Fig. 5.—Hudsònia. (H. tomentòsa, Nutt.) (*a*) Flowering branch. (*b*) Section of flower, enlarged.

The peculiar spring arrangement of the stamens helps to secure the desirable cross-fertilization of the flower. The honey being between the base of the stamens and the seed-case, when an insect in searching for the sweets touches a stamen he "springs" it. Thereupon he receives a smart rap and a dusting from the pollen-covered anther, and so is frightened away to other flowers.

5. Family CISTÀCEÆ. (Rock-rose Fam.)

Genus HUDSÒNIA, L. (Hudsonia.)

From the name of an early English botanist.

Fig. 5.—Hudsònia. *H. tomentòsa, Nutt.*

Flowers, bright-yellow, small, with stalks sometimes present and short, but usually wanting, crowded along the upper parts of the branches. *Petals*, five, not united, lasting only for a day. *Sepals*, five, two of them minute, and all of them much smaller than the petals. *Stamens*, nine to thirty. *Style*, long and slender. *Seed-case*, one, free, with one cell and two to six seeds. May to June.

Leaves, scale-like, about one twelfth of an inch long, closely pressed to the branches and covering them, downy and whitish.

Fruit, oblong, one-celled, two- to six-seeded, enclosed in the calyx. A pod.

Found, on sandy shores from Maine to Maryland and along the great lakes westward to Minnesota.

A very bushy heath-like little shrub, usually less than one foot high, and oftenest found growing in thick, matted patches.

Fig. 6.—St.-Peter's-wort. (A. stans, Michx.)

Fig. 7.—Shrubby St.-John's-wort, L. (Hypéricum prolíficum, L.)

Hudsònia. *H. ericòides, L.*

This species differs from the preceding chiefly in these items:

Flowers, on smooth slender stalks.

Leaves, greenish, one sixth to one third of an inch long, and spreading from the branch.

Found, along the coast from Maine to Virginia.

6. Family HYPERICÀCEÆ. (St.-John's-wort Fam.)

Flowers, yellow. *Petals*, four or five, not united. *Sepals*, four or five. *Stamens*, many. *Seed-case*, one, free, one- to five-celled; many-seeded.

Leaves, simple, opposite, entire, dotted when held to the light or under the lens. *Stipules*, none.

Fruit, dry, one- to five-celled, splitting lengthwise, a many-seeded capsule.

A Guide to the Genera.

Petals, four; Sepals four, in very unequal pairs.	(1)	Áscyrum (St. Peter's-wort.)
" five; " five, alike	(2)	Hypéricum (St. John's-wort.

(1) Genus Áscyrum, L. (St. Peter's-wort.)

From two Greek terms meaning "without" and "roughness."

Fig. 6.—St.-Peter's-wort. *A. stans, Michx.*

Flowers, usually three together, showy, at the ends of the branches. *Petals*, reverse egg-shape; the two larger sepals round, about one half inch across; the smaller ones lance-shaped. *Styles*, three or four. *Seed-case*, with one cell. June to August:

Leaves, ten twelfths to one and one fourth inches long, one third as wide, stemless, rather thick, oval or oblong, somewhat clasping around the branch.

Branches, two-edged, erect.

Fruit, splitting into two to four pieces.

Found, in pine barrens from Long Island to Pennsylvania and southward.

A small, stout shrub, with stem erect and straight, one to two feet high, and branching above.

Saint Andrew's Cross. *A. Crux-Andreæ, L.*

Flowers, one to three in a leafy cluster at the ends of the branches. *Petals*, oblong. Outer *sepals*, oval and twice as long as the flower-stem, the inner ones minute. *Styles*, two. *Seed-case*, with one cell.

Leaves, one half to one inch long, stemless, thin, narrowly reverse egg-shape, narrowed to the base. Branches two-edged toward their ends, drooping.

Fruit, splitting into two to four pieces.

Found, in Nantucket, and from the pine barrens of New Jersey westward and southward.

A drooping shrub, one to two feet high, with many branches.

(2) Genus HYPÉRICUM, Tourn. (St.-John's-wort.)

In the old mythology the St.-John's-wort was dedicated to Baldur, the Sun God, on account of its golden flowers. When the old religion gave way to Christianity, Baldur's Day became St.-John's-day, and Baldur's flower St. John's flower.

The genus was once in high repute for its supposed ability to guard against evil spirits, and for other magical powers. On this account the various species were often planted around dwellings. In Scotland the plant is said still to be carried as a charm; and in France and Germany,

on the day of the nativity of St. John the Baptist, the peasantry trim their homes with it in honor of the saint, and to gain his favor.

"I must gather the mystic St.-John's-wort to-night,
The wonderful herb whose leaf will decide
If the coming year shall make me a bride."

Translated from the German.

"Trefoil, Vervain, *John's-wort*, Dill,
Hinder witches of their will."

Fig. 7.—Shrubby St.-John's-wort. *H. prolíficum, L.*

Flowers, orange-yellow, three quarters of an inch across, crowded in simple or compound leafy clusters. *Stamens*, very numerous. *Seed-case*, three-celled. *Styles*, three more or less united. July, August.

Leaves, one to two and one half inches long, narrow; edge often wavy; apex usually obtuse; base narrowed.

Branchlets, two-edged.

Fruit, one third to one half inch long.

Found, from New Jersey to Michigan and southward.

A very ornamental little shrub, usually two to four feet in height, but variable in size.

Hypéricum densiflòrum. *Pursh.*

This species differs from the preceding chiefly in these items:

Flowers, one half to two thirds of an inch in diameter, in crowded compound clusters.

Leaves, about one inch in length.

Fruit, one third to one quarter inch in length.

Found, from the pine barrens of New Jersey to Kentucky and Arkansas, and southward.

Kalm's St.-John's-wort. *H. Kalmiànum, L.*

Flowers, one inch across, three to seven in a close cluster.

Styles, five. *Seed-case*, five-celled.

Leaves, one to two inches long, crowded and narrow.

Branches, somewhat four-sided, with two of the edges slightly winged.

Fruit, egg-shape.

Found, on wet rocks at Niagara Falls, and among the northern lakes.

7. Family RUTÀCEÆ. (Rue Fam.)

Flowers, small, greenish-white, in clusters ; sometimes taking the staminate and the pistillate forms on different shrubs. *Petals*, three to five, not united. *Sepals*, three to five, or wanting. *Stamens*, in the staminate flowers, as many as the petals and alternate with them ; in the pistillate flowers, either imperfect or wanting. *Seed-cases*, one to five, free from the calyx.

Leaves, compound, alternate, dotted when held to the light ; edge of leaflets entire or nearly so. *Stipules*, none.

Bark, pungent or bitter.

Fruit, one- to two-seeded, one-celled, splitting into two pieces, thick and fleshy, a fleshy pod ; or two-celled, two-seeded, thin, and winged all around ; a samara.

GUIDE TO THE GENERA.

Stems prickly ; Seed-cases three to five, separate. (1) Xanthóxylum (Prickly Ash).
Stems not prickly ; Seed-case, one with two cells. (2) Ptèlea (Shrubby Trefoil).

(1) Genus XANTHÓXYLUM, L. (Prickly Ash.)

From two Greek words meaning "yellow" and "wood."

Fig. 8. Northern Prickly Ash. Toothache Tree.
X. Americànum, Mill.

Flowers, in small, dense clusters at the sides of the branches, appearing before the leaves, and sometimes taking the pistillate form on one tree, and the staminate on another. *Petals*, four to five. *Sepals*, four

to five, or obsolete. *Seed-cases*, three to five, separate, but with their slender styles more or less united. April, May.

Leaves, alternate. *Leaflets*, in two to four pairs, with an odd one at the end; edges entire or nearly so; surface smooth above (or when young, downy), downy beneath.

Branches, and often the leaf-stalks armed with short, stout, brown prickles.

Fruit, thick and fleshy, one-celled, splitting lengthwise into two parts; one- to two-seeded. *Seeds*, black, smooth, and shining.

Found, in rocky woods, and along river banks; often forming thickets; common, especially northward.

A shrub four to twelve feet high, or in cultivation sometimes twenty feet high. All its parts are bitter and aromatic. The leaves furnish a home remedy for rheumatism, toothache, etc. When crushed they yield a strong lemon odor, due to an oil contained in the transparent dots. The bush serves well for hedges.

It is said that the Indians use the prickly ash as a medicine under the name of Hantola; that they chew the bark for aching teeth; make decoctions, mostly of the roots. for rheumatism and colic; and, mixed with bear's grease, use it for poultices.

In typhoid cases the tincture of the berry is considered very helpful. "In typhus fever, typhus pneumonia, and typhoid conditions generally, I am compelled to say that I consider the tincture of prickly-ash berries superior to any other kind of medicine."—Dr. King as quoted by Millspaugh.

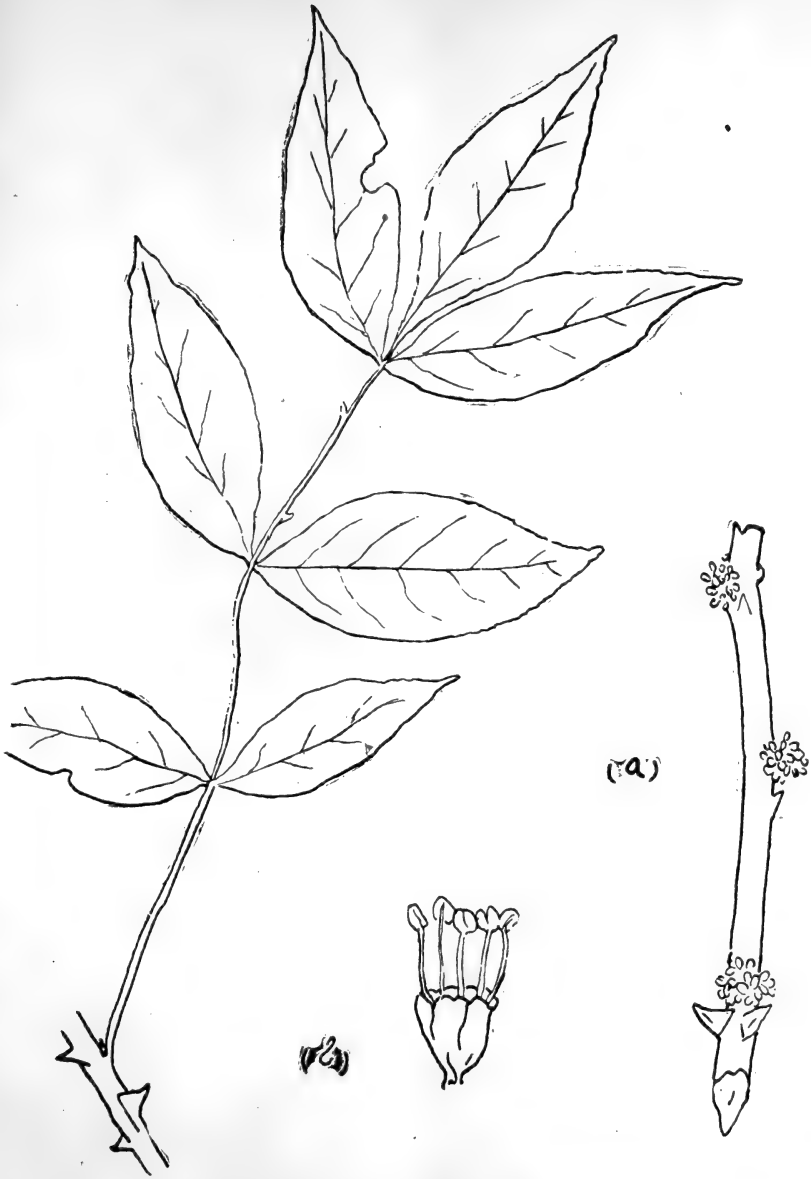


Fig. 8.—Prickly Ash. (X. Americànum, Mill.)

(*a*) Flowering twig. (*b*) Staminate flower, enlarged.

(2) Genus PTELÈA, L. (Shrubby Trefoil.)

From the Greek name of the elm, given because of the similarity of the fruits.

Fig. 9.—Shrubby Trefoil. Hop Tree. *P. trifoliàta, L.*

Flowers, of marked odor, in small compound clusters at the ends of the young branches. Staminate, pistillate, and perfect flowers sometimes form on the same bush. *Petals*, sepals, and stamens three to five. *Seed-case*, two-celled. *Style*, short. June.

Leaves, of three leaflets, two to four inches long, with edges entire or nearly so, and downy when young.

Fruit, "orbicular," two-celled, two-seeded, with the edge broadly winged throughout; nearly one inch across; intensely bitter, and used as a substitute for hops; a samara.

Found, in rocky places from Long Island to Minnesota, and southward.

A shrub six to eight feet high, well fitted for ornament, being neat in appearance, not liable to attack from insects, and hung late in the season with large bunches of hop-like fruit. Its leaves and flowers are late in unfolding.

8. Family ILICÍNEÆ. (Holly Fam.)

Flowers, in staminate and pistillate forms, white or greenish, small, along the sides of the branches (axillary.) *Petals*, four to eight, separate, or slightly united at the base. *Calyx*, minute. *Stamens*, as many as the petals, and alternate with them. *Seed-case*, free from the calyx, four- to eight-celled, four- to eight-seeded.

Leaves, simple, alternate, edge-toothed or entire.

Fruit, berry-like drupes about the size of peas, with four to eight stones.

GUIDE TO THE GENERA.

Petals oval or reverse egg-shape; Leaves toothed.	(1) Ìlex (Holly, etc.).
Petals narrow and pointed; Leaves entire (or sometimes slightly toothed).	(2) Nemopánthes (Mt. Holly).

Fig. 9.—Hop Tree. (P. trifoliàta, L.)

(*a*) Fruit. (*b*) Staminate flower, enlarged.

(1) Genus Ilex, L. (Holly, etc.)

Fig. 10.—Ilex montana, T. and G. *I. monticola, G.*

Flowers, with their parts in fours or fives (or rarely in sixes). *Sepals*, delicately fringed with fine hairs. Staminate flowers usually in clusters; pistillate usually solitary, with very short stems.

Leaves, three to five inches long, egg-shape or long oval, sharply toothed, mostly smooth. *Apex* and base, pointed.

Fruit, the size of a pea; fleshy, red or purple. *Nutlets*, four to six, each finely lined along the back; a drupe.

Found, in damp woods in the Catskill and Tahonic Mountains, and in Cattaraugus County, N. Y., through Pennsylvania as far east as Northampton County, and southward along the Alleghanies.

A shrub sometimes taking the size and shape of a small tree.

Soft Ilex. *I. mollis, Gray.*

This species quite closely resembles the preceding, except in these items:

Flowers, the staminate clusters with very many blossoms.

Leaves, soft, downy beneath.

Found, in Burgoons Gap, Alleghanies of Pennsylvania, and along the mountains in the Southern States.

Fig. 11.—Winterberry. Black Alder. *I. verticillata (L.), Gray.*

Flowers, the staminate in stemless clusters, with the parts in fours, fives, or sixes; the pistillate, solitary or clustered, with the parts in sixes (or rarely in fives, sevens, or eights). *Flower-stems*, all very short. July.

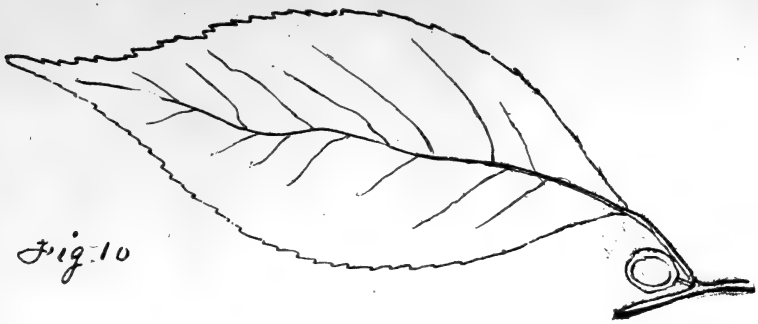


Fig. 10.—Ilex. (I. montàna, G. and T.)
Fig. 11.—Winterberry. I. verticillàta (L.), G.

Leaves, variable, reverse egg-shape to oval and wedge-shape, downy beneath, especially along the vines, strongly net-veined. *Apex* and base pointed. *Leaf-stems*, short.

Fruit, about the size of a small pea, fleshy, bright red. *Nutlets*, six to eight, smooth, moon-shape, often continuing in place long after the leaves have fallen; a drupe. September, October.

Found, in moist woods or swamps; common.

A shrub, usually about eight feet high; very noticeable among the autumn trees and bushes because of its show of fiery-red berries. Its bark is tonic, astringent, and antiseptic, and is often used with the effect of Peruvian bark in intermittent fevers. "It is probably as well known to domestic practice as any indigenous shrub."

Smooth Winterberry. *I. lævigàta (Pursh.), Gray.*

This species differs from the last chiefly in these items:

Flowers, the staminate forms on stems nearly one inch long. June.

Leaves, shining above, smooth beneath, and only minutely downy on the veins. *Leaf-stems*, one half to five sixths of an inch long.

Fruit, larger than the last (about one third inch in diameter) and ripening earlier. September.

Found, in wet ground from the mountains of Virginia northward.

Fig. 12.—Inkberry. *I. glàbra (L.), Gray.*

Flowers, small and white, with the parts mostly in sixes; the staminate blossoms in a three- to six-flowered

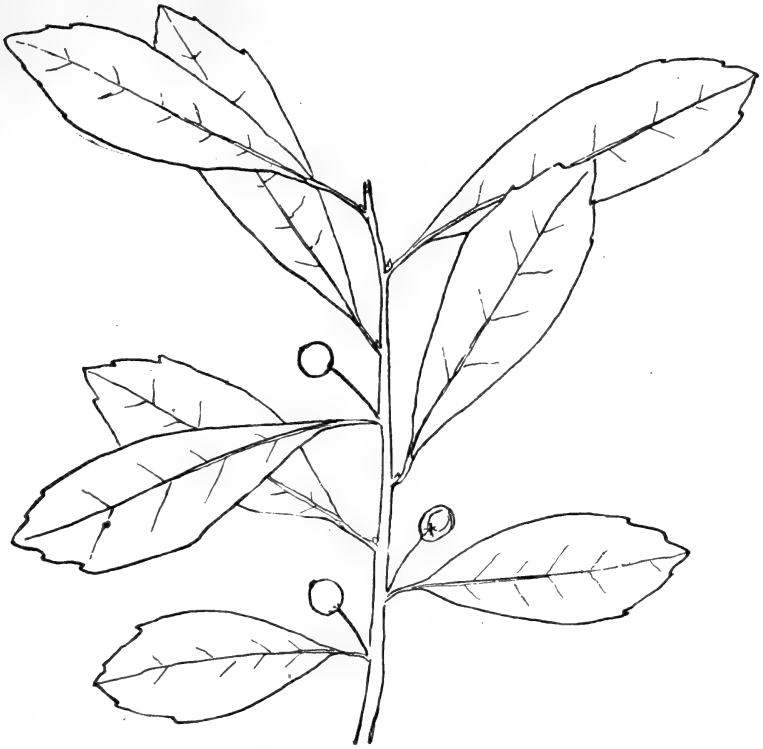


Fig. 12.—Inkberry. I. glàbra (L.), G.

cluster, the fertile ones usually solitary. *Flower-stem*, about one half inch long, slender, and minutely hairy. June.

Leaves, one to one and three quarter inches long, thick, dark, and very shiny above, both surfaces smooth, veins beneath scarcely perceptible; wedge-shape or oblong, notched toward the apex, with a few (usually five) remote teeth.

Fruit, the size of a small pea in the axils of the leaves, round, black, shining, often remaining through the winter; not edible. *Stones*, four to six, smooth; a berry-like drupe.

Found, in sandy and low ground from Cape Ann, Massachusetts, southward near the coast.

A pretty evergreen shrub two to four feet high, well worthy of cultivation because of its neat shape and shining evergreen leaves.

It is considered of value medicinally (in fevers), but its chief use is for decoration. Quantities of it are sent from the southern counties of New Jersey to the New York florists, who easily keep it in good condition for several months.

(2) Genus Nemopánthes, Raf.

Probably from the Greek words meaning "thread," "foot," and "flower," in reference to the thread-like stalk of the blossom.

Fig. 13.—Mountain Holly. *N. mucronàta (L.), Trelease. N. fasciculàris, Raf.*

Flowers, usually solitary, small, greenish-white, on long, slender stems. *Petals*, four or five, narrow, pointed, as long as the stamens, separate. *Sepals*, in the staminate flowers in the form of minute teeth; in the

Fig. 13.—Mountain Holly. N. mucronàta (L.) Trelease.

pistillate only rudimentary. *Stamens*, four or five, with slender filaments. *Seed-case*, hemispherical. May, June.

Leaves, one to two inches long, egg-shape to reverse egg-shape, edge entire, or sometimes slightly toothed; smooth. *Leaf-stem*, slender.

Fruit, the size of a pea, red, nearly round, on slender stems. *Nutlets*, four or five, somewhat angular; a berry-like drupe. August.

Found, in damp ground from the mountains of Virginia northward.

A much-branched shrub four to eight feet high, with smooth ash-gray bark; the young shoots purple or olive, with round gray dots.

I found the pretty bush first on an open, rocky point in Lake Placid, among the Adirondacks. It was set thick with bright red berries, and its whole aspect, owing to the toughening of the wind and sun, was tangled and "chunky." Afterward I found it where it had been more delicately reared, in the damp shade of the neighboring woods, with straighter and slimmer branches, and paler foliage.

9. Family CELASTRÀCEÆ. (Staff-Tree Fam.)

Genus EUÓNYMUS, Tourn. (Burning-Bush, etc.)

From two Greek words meaning "good" and "name."

Fig. 14.—Burning-Bush. Waahoo. Spindle-Tree.
E. atropurpùreus, Jacq.

Flowers, dark purple, small, regular in loose clusters of three to six blossoms, at the sides of the branches; the parts of the flower commonly in fours. *Stamens*,

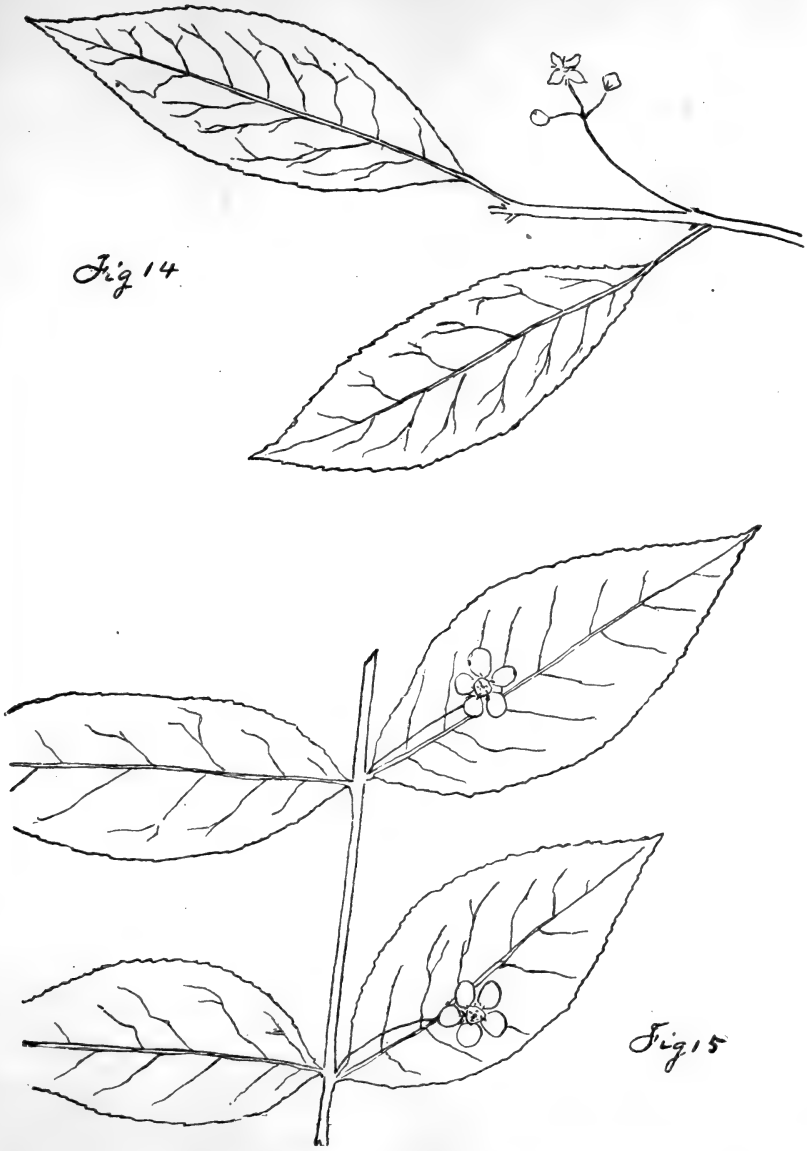


Fig. 14.—Burning-Bush. (E. atropurpùreus, Jacq.)
Fig. 15. Strawberry-Bush. (E. Americànus, L.)

very short, alternating with the petals, and inserted on a disk which occupies the lower part of the calyx, and is stretched over the seed-case, partly adhering to it. *Seed-case*, free from the calyx, two to five-celled, with one to four seeds in each cell. *Style*, short or none. *Stem*, of the flower-clusters, slender, one to two and one half inches long. June

Leaves, two to five inches long, simple, opposite, toothed, variable in shape, oval and oblong to reverse egg-shape. *Leaf-stem*, one half to one inch long. *Branch-lets*, four-sided.

Fruit, very showy, smooth, deeply lobed; when ripe splitting up and down into three to five valves, and so showing the bright red covers of the seeds within. *Cells*, three to five. *Seeds*, few (one to four in each cell), elliptical; a capsule.

Found, in shady woods widely distributed, and in cultivation.

A smooth-barked shrub, six to seventeen feet high, often cultivated, and very attractive in autumn with its abundant drooping clusters of "burning" berries. A medicine of some repute has been prepared from it called "Waahoo."

Fig. 15.—Strawberry-Bush. *E. Americànus, L.*

This species differs from the last chiefly in the following items:

Flowers, greenish, or greenish-purple, and mostly in fives.

Leaves, one to two inches long, nearly stemless.

Fruit, rough, warty, and depressed. *Seeds*, smaller and egg-shape or oval.

Found, in damp and shady places from New York to Illinois, and southward.

An upright or sometimes straggling shrub, two to five feet high.

10. Family RHAMNÀCEÆ. (Buckthorn Fam.)

Flowers, greenish or white, small and regular (sometimes with the petals wanting). *Petals*, when present, four to five, not united. *Sepals*, four to five. *Stamens*, of the same number as the petals, and alternate with them. *Seed-case*, free from the calyx, or sometimes united to it, two- to five-celled. *Seeds*, one in each cell. Stamens and petals inserted along the edge of a fleshy disk, which lines the tube of the calyx, and in Ceanòthus unites it to the lower part of the seed-case

Leaves, simple, alternate, fine-toothed.

Fruit, a berry-like drupe or a capsule.

GUIDE TO THE GENERA.

Flowers, greenish; Fruit fleshy and berry-like; a drupe.	(1) Rhámnus (Buckthorns).
Flowers, white; Fruit dry and at length splitting; a capsule.	(2) Ceanòthus (New Jersey Tea, etc.).

(1) Genus RHÁMNUS, Tourn. (Buckthorns.)

Fig. 16.—Lance-Leaved Buckthorn. *R. lanceolàta, Pursh.*

Flowers, yellowish-green, small, at the sides of the branches; found sometimes in two slightly different forms on different bushes, but both forms perfect. *Petals*, four and deeply notched. *Sepals*, four. *Stamens*, four. *Seed-case*, free, two- to four-celled. May.

Leaves, oval and oblong, pointed, or on the flowering shoots sometimes blunted.

Fruit, about the size of a small pea, black and fleshy. *Seeds*, two, deeply grooved; a berry-like drupe.

Found, from Pennsylvania to Illinois and Tennessee, and westward.

A tall, unarmed shrub.

Fig. 17.—Alder-Leaved Buckthorn. *R. alnifòlia, L'Her.*

Flowers, greenish, small, in clusters at the sides of the branches; the staminate and the pistillate forms usually found on different bushes. *Petals*, wanting. *Sepals*, five. *Stamens*, five. *Seed-case*, two- to four-celled, free from the calyx. June.

Leaves, one to three inches long, about one half as wide.

Fruit, about as large as a currant, somewhat pear-shape, black and fleshy. *Seeds*, three, deeply grooved along the back; a berry-like drupe.

Found, in rough fields and swamps from Maine to Pennsylvania and Nebraska, and northward; common.

A shrub two to four feet high, without thorns.

Common Buckthorn. [*R. cathártica, L.*]

This species is a native of Europe. It is cultivated widely in the form of thorny hedges, and is occasionally found growing wild in the Eastern States. The leaves are egg-shape; the fruit three- to four-seeded.

As far back as the 13th century it was noticed for its medicinal qualities. During the 16th century all medical writers commented on it. It is now fallen into disuse, its cathartic effect being considered too violent.

Carolina Buckthorn. *R. Caroliniàna, Walt.*

Flowers, greenish, small, perfect; in one form in clusters, in another solitary, with short stem. *Petals*, five. *Sepals*, five. *Seed-case*, free. June.

Leaves, two to five inches long, obscurely toothed, strongly veined.

Fruit, black, fleshy, berry-like. *Seeds*, three, not furrowed; a berry-like drupe.

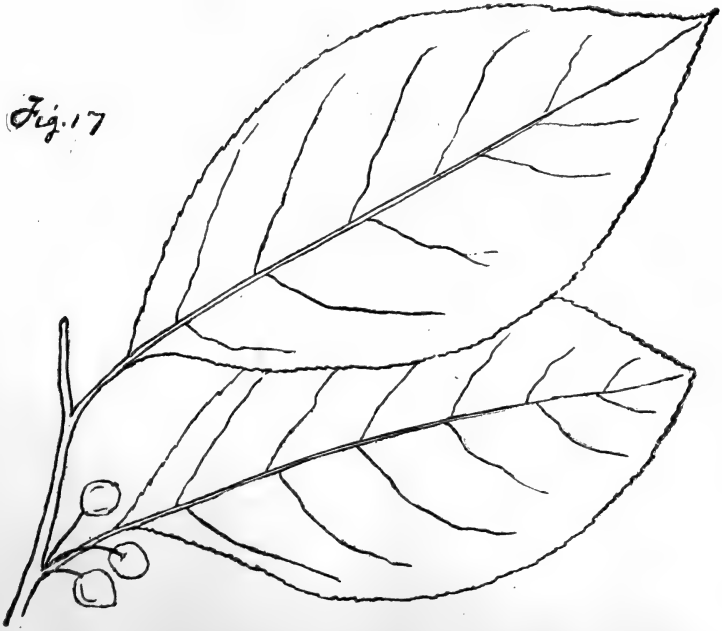


Fig. 16.—Lance-Leaved Buckthorn. (R. lanceolàta, Pursh.)
Fig. 17.—Alder-Leaved Buckthorn. (R. alnifòlia, L'Her.)

Found, in wet places, from New Jersey southward.

A thornless shrub, or sometimes a small tree.

(2) Genus CEANÒTHUS, L. (New Jersey Tea, etc.)

Fig. 18.—Narrow-Leaved Ceanòthus. *C. ovàtus, Desf.*

This species differs from the next chiefly in these items:

Flowers, somewhat larger, in nearly hemispherical clusters that are about one and one half inches in diameter. May.

Leaves, narrow oval to narrow egg-shape, usually pointed at both ends, and smooth, or nearly so; the glandular teeth of the edge often black-tipped.

Found, among dry rocks, Western Vermont and Massachusetts, and westward. It is rare in the East.

Fig. 19.—New Jersey Tea. Red-Root. *C. Americànus, L.*

Flowers, white, in lengthened clusters at the summit of the flower branches. *Petals*, five, spreading, hooded, attached by slender claws, longer than the calyx. *Calyx*, five-lobed, incurved, the lower part attached with the thick disk to the seed-case, and remaining long after the lobes and the ripened fruit have fallen. Calyx and flower-stem colored like the petals. *Seed-case*, three-celled. July.

Leaves, three quarters to three inches long, egg-shape, dark, dull green; very prominently three-veined from the base, toothed, downy, or often nearly smooth. *Apex*, pointed or obtuse; base often slightly heart-shape.

Fruit, small, dry, three-lobed and three-celled, splitting up and down into three parts. *Seeds*, not furrowed, one in each cell. A capsule.

Fig. 18.—Narrow-Leaved Ceanòthus. (C. ovàtus, Desf.)
(*a*) Flower enlarged.
Fig. 19.—New Jersey Tea. (C. Americànus, L.)
(*b*) Fruit.

Found, widely distributed in dry woodlands and fields from Canada to Florida.

A shrub one to three feet high, springing from a large dark red root. During the American Revolution and in the Civil War, in some of the Southern States its leaves served for tea. Its root is sometimes used for dyeing.

Common as the shrub is, it was late before I learned to know it; but since that time until now, when it has come to be one of my familiar friends, always the prettiest thing about it has seemed to me to be its quaint and tiny silver-lined cups, emptied of their ripened seeds and shining on their dried stalks among the flowers and leaves of a new year's growth.

It was once widely advertised that the true China tea plant had been discovered in a county of Pennsylvania, and that its identity was certified by an expert from Assam. A company was even formed for its cultivation and sale. The fraud was soon detected; they were using the leaves of the New Jersey tea. An infusion of these leaves tastes like the poorer grades of imported teas, but probably it has none of the tonic effects of real tea.

11. Family SAPINDÀCEÆ. (Soapberry Fam.)

(1) Genus Àcer, Tourn. (Maple.)

Fig. 20.—Mountain Maple. *A. spicàtum, Lam.*

Flowers, greenish, small, regular, crowded in lengthened and upright clusters, which become drooping in fruit; either perfect or in the staminate and pistillate forms on separate plants, appearing after the leaves. *Petals*, narrow, generally five, not united. *Sepals*, of the

Fig. 20.—Mountain Maple. (A. spicàtum, Lam.)

same number, colored. *Stamens*, six to eight. *Styles*, two, long and slender, and united only below. *Seed-case*, free, two-lobed and two-celled, with two young seeds in each cell (only one ripening). June.

Leaves, simple, opposite, three- (or slightly five-) lobed, the lobes toothed; downy beneath; more or less heart-shaped at base. *Bark*, light gray.

Fruit, in drooping clusters, two-winged, two-seeded; a double samara or "key."

Found, usually in clumps in moist and hilly woods, widely distributed from Maine to Wisconsin, and northward; and southward along the Alleghanies to Virginia and Kentucky.

A shrub six to fifteen feet high, easily distinguished by its bark and leaves from its near relation and frequent neighbor, the Striped Maple (*A. Pennsylvánicum, L.*), which is often of no greater height, though ranked with the trees, and which has a similar liking for damp and hilly woods. The latter has larger and differently shaped leaves (Fig. 74, *Trees of Northeastern America*), and a greenish bark, peculiarly marked lengthwise with stripes.

(2) Genus Staphylèa, L. (Bladder-Nut.)

From a Greek word meaning "cluster."

Fig. 21.—American Bladder-Nut. *S. trifòlia, L.*

Flowers, white, handsome, in short, drooping clusters at the ends of the branchlets. *Petals*, five, not united. *Stamens*, five, alternating with the petals. *Sepals*, five, whitish. *Styles*, three, lightly united. *Seed-case*, free from the calyx, but with its base slightly sunk in the fleshy receptacle; with three cells, each cell containing several young seeds.

Fig. 21.—Bladder-Nut. (S. trifòlia, L.)
(*a*) Fruit.

Leaves, compound, opposite; leaflets three to five, toothed, pale beneath, with scattered hairs. *Branches*, greenish-striped.

Fruit, the most remarkable thing about the plant, large, inflated, three-sided, three-parted at the top, three-celled, each cell with one to four smooth, hard seeds, with an odor much like that of a pea-pod. A capsule.

Found, in moist woods and thickets northward from North Carolina and Tennessee.

A handsome shrub, six to ten feet high.

12. Family ANACARDIÀCEÆ. (Sumach Fam.)

Genus RHUS, L. (Sumachs.)

Possibly from a word meaning "red."

Flowers, greenish, yellowish, or reddish, small, regular, often in the staminate and pistillate forms. *Petals*, five, not united. *Sepals*, five. *Stamens*, five, alternate with the petals. *Styles*, three. *Seed-case*, free, one-celled, with one seed.

Leaves, compound, alternate.

Fruit, nearly round, small, not splitting when ripe, one-seeded. An almost dry drupe.

GUIDE TO THE SPECIES.

(*a*) Leaflets, more than three.
  (*b*) Edge of leaflets toothed.
    (*c*) Leaf-stem and branchlets smooth. (1) Smooth Sumach.
    (*c*) " " " very downy. (2) Stag-Horn Sumach.
  (*b*) Edge of leaflets entire.
    (*c*) The common leaf-stem winged between the leaflets. (3) Dwarf Sumach.
    (*c*) The common leaf-stem not winged. (4) Poison Sumach.
(*a*) Leaflets, three.
  (*b*) Edge of leaflets entire, or with a few sharp teeth. (5) Poison Ivy.
  (*b*) Edge of leaflets with large rounded teeth. (6) Sweet Sumach.

R canadensis

Fig. 22.—(1) Smooth Sumach. *R. glàbra, L.*

Flowers, small, greenish-red, in dense terminal pyramid-shaped clusters. June, July.

Leaflets, eleven to thirteen, two to three and a half inches long, toothed, pale beneath. *Leaf-stem* and branchlets, smooth.

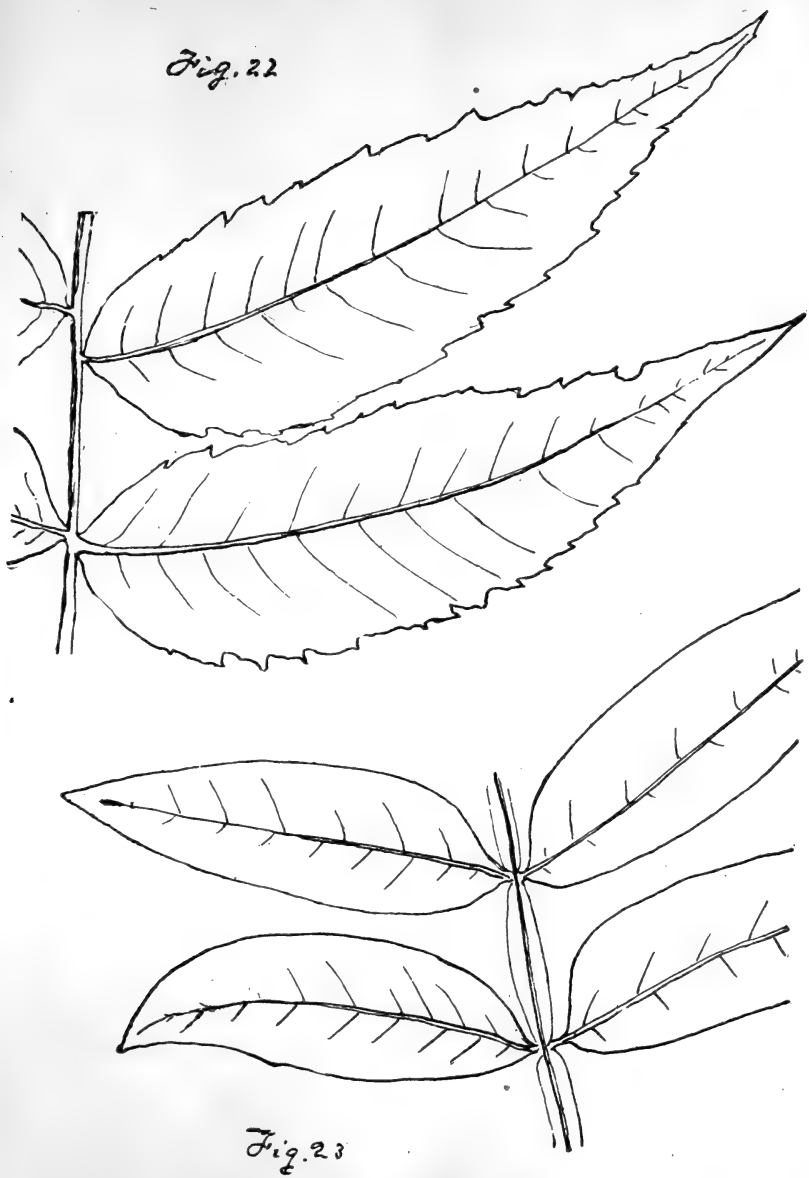


Fig. 22.—Smooth Sumach. (R. glàbra, L.)
Fig. 23.—Dwarf Sumach. (R. copallìna, L.)

Fruit, red, with crimson hairs, very sour. *Stone*, smooth. A dry drupe.

Found, very widely distributed in waste and barren places.

A shrub five to fifteen feet high, smooth throughout (excepting in its fruit) with straggling branches, often in extensive clumps and thickets. The bark of this and of other Sumachs is used in tanning. An infusion of the berries makes a pleasant and cooling drink in fevers. Also the berries yield a red dye. In autumn the leaves take a brilliant shade of crimson. The Sumachs are often cultivated; they are easily raised from seed, or they may be propagated from root cuttings.

(2) **Stag-Horn Sumach.** *R. týphina, L.*

Flowers, small, greenish-yellow, crowded in upright, pyramid-shaped, terminal clusters. June.

Leaflets, closely resembling those of the preceding species (the Smooth Sumach), eleven- to thirty-one-toothed, whitish and more or less downy beneath. *Leaf-stem* and branchlets, especially toward their ends, covered with a very dense velvet-like and often crimson-tinged down.

Fruit, rounded, somewhat flattened, covered with a crimson and very acid down. *Stone*, smooth. A dry drupe. September, October.

Found, oftenest in rocky and barren places from New Brunswick and the valley of the St. Lawrence through the Northern States, and southward along the Alleghany Mountains to Central Alabama.

A larger shrub than the Smooth Sumach, sometimes twenty feet high, and often taking the tree form. The straggling, evenly spreading branches, with the leaves

mostly toward their ends, give a peculiar umbrella-like look. The wood is very soft and brittle, yellow, with the sap-wood white. In spring in the sugar orchards the young shoots, cleared of their pith, serve as "sap quills" for drawing the running sap from the maples. The wood forms a yellow dye, and an infusion of the berries is used as a gargle for sore-throat. The thick down upon the young branches, and their shape, are suggestive of the horns of a stag, whence the name.

Fig. 23.—(3) **Dwarf Sumach. Mountain Sumach.** *R. copallìna, L.*

Flowers, small, greenish, in upright pyramid-shaped, stemless clusters, toward the ends of the branches. July.

Leaflets, nine to twenty-one (oftenest nine to thirteen), one to three inches long, edge entire, base usually rounded and one-sided, upper surface dark and shining. *Leaf-stem*, expanded between the pairs of leaflets into broadly winged margins.

Fruit, rounded, hairy, varying in color in ripening from delicate neutral tints, grays and drabs, to red; acid. *Stone*, smooth. September.

Found, very widely distributed, usually in dry and rocky places.

A shrub three to five feet high, or sometimes, in favorable locations, twenty feet high, oftenest forming clumps or borders along the edge of woods and thickets. Its peculiar winged foliage, and the constantly changing tints of flower, fruit, and leaf, make it the most attractive of the Sumachs, and best worthy of ornamental cultivation. A mass of them set in a corner of the garden or grounds would be constantly attractive.

Fig. 24.—(4) Poison Sumach. Poison Dogwood. Poison Elder. *R. vernix, L. (R. venenàta, D. C.)*

Flowers, small, green, in long, loose clusters at the bases of the upper leaves. June.

Leaflets, seven to thirteen, edge entire, long oval or egg-shape, smooth and thin, base rounded or pointed. *Leaf-stem*, red throughout, and not winged.

Fruit, about the size of small peas, rounded, smooth, shining, dry. *Stone*, lined. A dry drupe. September.

Found, in swampy land, widely distributed.

A tall shrub (or sometimes a small tree) six to eighteen feet high. It is violently poisonous to the touch, causing, in most persons, a painful eruption; some are poisoned by it without touching it, probably by means of the drifting pollen of its flowers. A recommended application is sugar of lead, applied after the use of saline cathartics, or a thick paste of bicarbonate of soda rubbed into the skin as soon as the eruption appears. It is also claimed that relief and, if used promptly, frequent cure follow the use of belladonna, of apis mellifica, or of arsenicum album, taken in homœopathic doses. But there are wellnigh as many recommended antidotes as there are for the bite of a rattlesnake.

Apart from other differences, the Poison Sumach can be easily and quickly distinguished from all other Sumachs by these signs: It differs from the Smooth Sumach and the Stag-Horn Sumach in having the edge of its leaflets entire; from the Dwarf Sumach, by the absence of the winged stem between its leaflets and by its red leaf-stem.

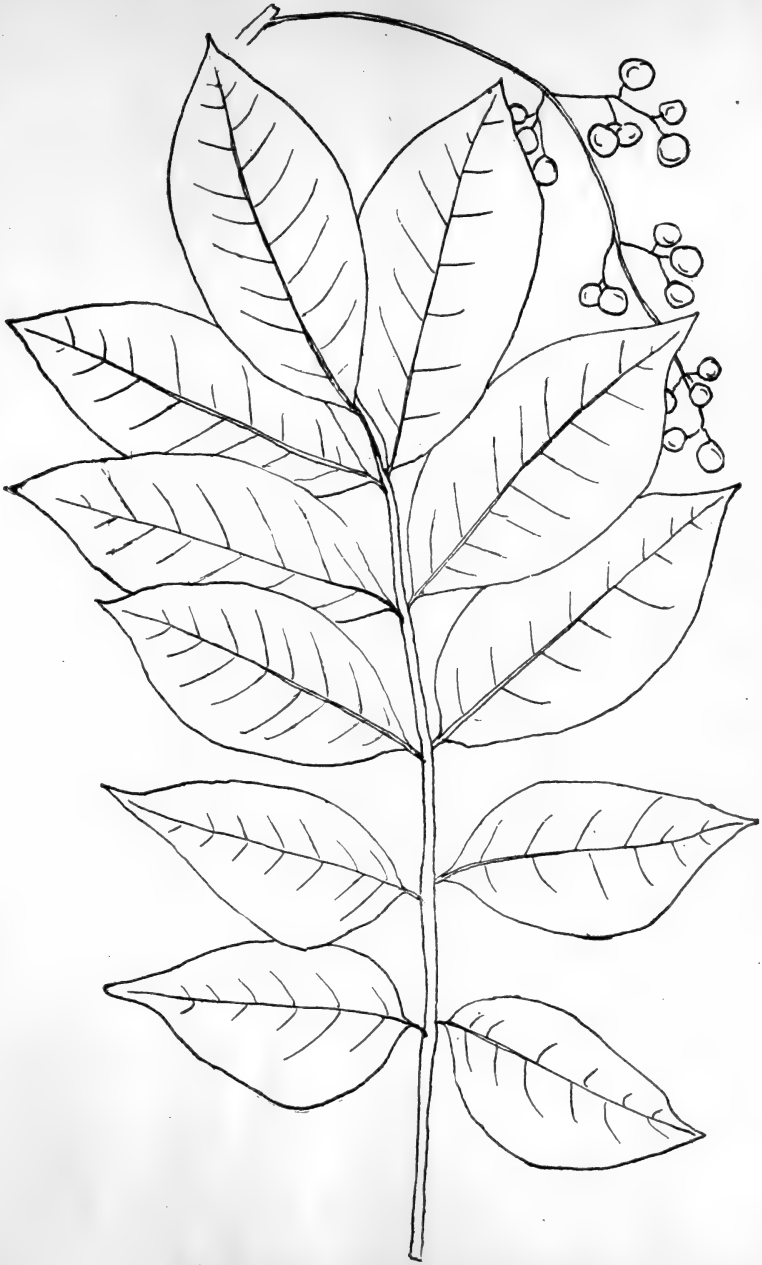


Fig. 24.—Poison Sumach. (R. vérnix, L.)

Fig. 25.—(5) Poison Ivy. Poison Oak. *R. rádicans, L. (R. toxicodendron, L.)*

Flowers, small, greenish, in loose clusters from the axils of the leaves, the staminate and pistillate forms on different plants. June.

Leaflets, three, edge entire, or variously sharp-notched, mostly pointed, and somewhat downy beneath.

Fruit, small, rounded, pale brown or whitish, smooth. *Stone*, lined. September.

Found, widely distributed in open grounds and among trees, along walls and fences.

A shrub that is less poisonous than the Poison Sumach, but more dreaded because the latter is confined to swampy grounds, while the Poison Ivy is found everywhere. It takes all positions; sometimes it is erect (one to three feet high), often it is prostrate and trailing; oftenest, perhaps, it is climbing. In its climbing form it covers the posts of fences, the trunks and branches of trees, stone walls—clinging tenaciously wherever it goes by multitudes of thread-like rootlets, and sometimes reaching a distance of forty or even fifty feet, with a stem from two to five or six inches in diameter. At times it so closely covers its growing support as to smother it. Its poisonous qualities are the same in kind as those of the Poison Sumach.

Fig. 26.—(6) Sweet Sumach. *R. aromática, Ait. (R. Canadénsis, Marsh.)*

Flowers, small, yellowish, in small spikes or heads, unfolding before the leaves.

Leaflets, three, one to three inches long, the end one sometimes three-cleft, edge unequally round-toothed.

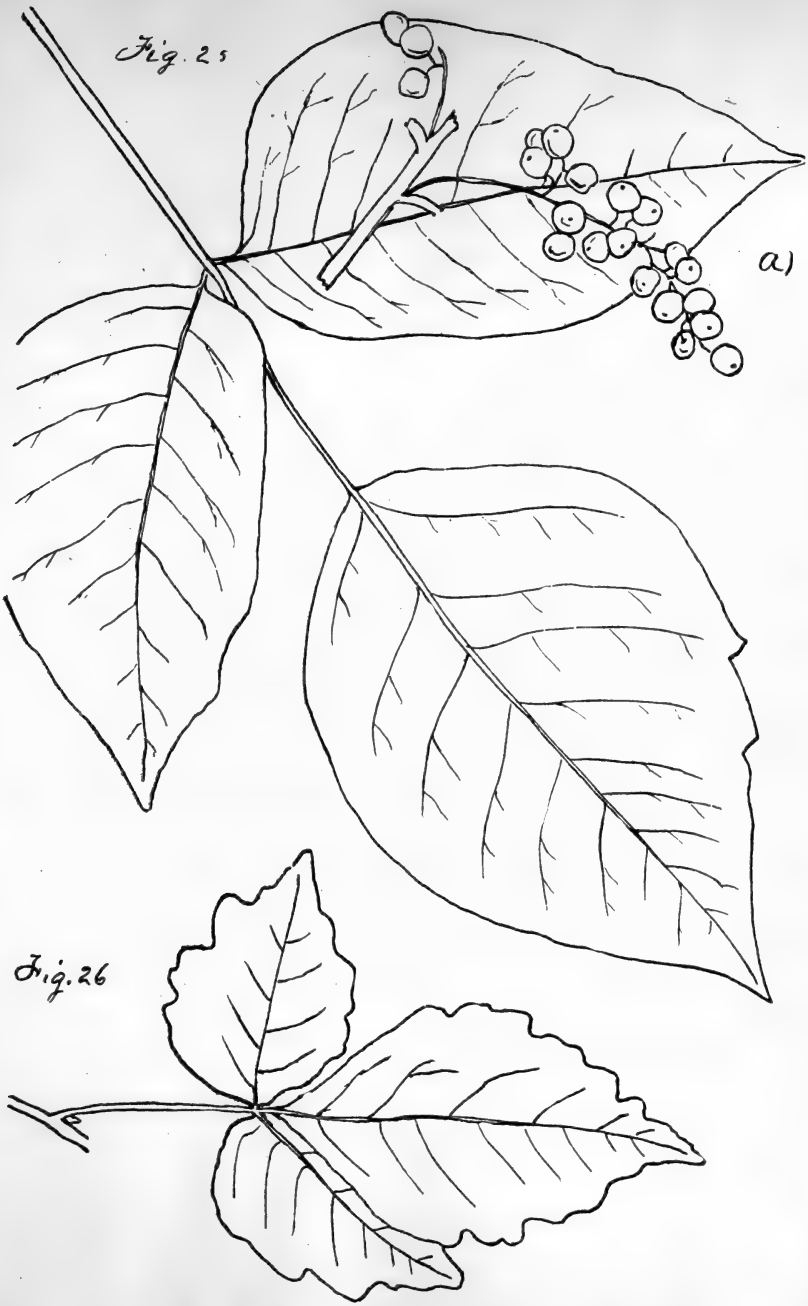


Fig. 25.—Poison Ivy. (R. rádicans, L.) (*a*) Fruit.
Fig. 26.—Sweet Sumach. (R. aromática, Ait.)

Fruit, rounded, red, acid. A dry drupe.

Found, widely distributed north and south on dry open ground, and in thickets.

A straggling shrub, two to six feet high, with leaves of a pleasant, aromatic odor when crushed.

13. Family LEGUMINÒSÆ. (Pulse Fam.)

Genus AMÓRPHA, L. (False Indigo, etc.)

From a Greek word meaning "without form," because of the absence of a part of its petals.

Fig. 27.—False Indigo. *A. fructicòsa, L.*

Flowers, irregular, violet or purple, crowded in clustered terminal spikes. *Petal*, one. *Stamens*, ten, united at the base. *Sepals*, five. *Seed-case*, one, one-celled, free, two-seeded, longer than the calyx. May, June.

Leaves, compound, alternate, three to five inches long. *Leaflets*, fifteen to seventeen, about one inch long, edge entire, marked with small dots.

Fruit, small, two-seeded. A pod.

Found, from Southern Pennsylvania southward, and far westward.

A shrub six to sixteen feet high.

Lead-Plant. *A. canéscens, Nutt.*

This species differs from the preceding chiefly in these items:

Flowers, bright blue.

Leaflets, thirty-one to fifty-one, small (one and a half inches or less), crowded.

Fruit, one-seeded.

Found, westward.

A pretty shrub, two to four feet high, taking its name from a supposed liking for localities containing lead-ore.

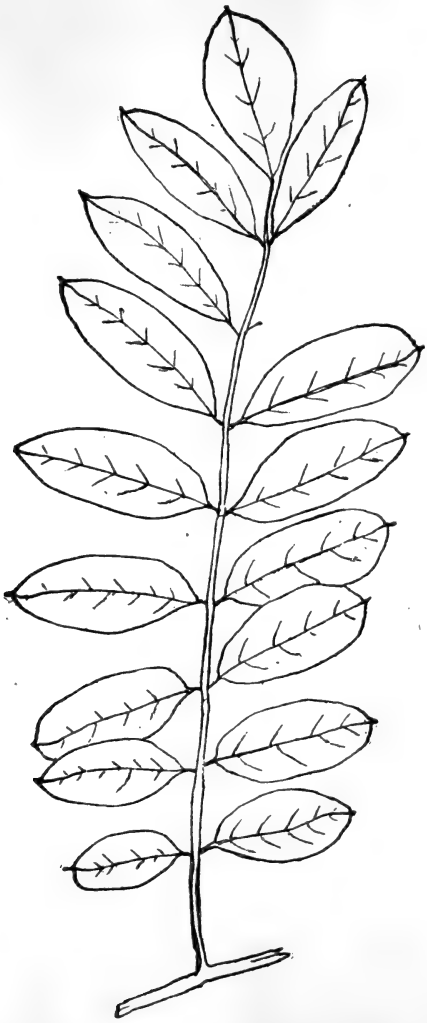


Fig. 27.—False Indigo. (A. fructicòsa, L.)

14. Family ROSÀCEÆ. (Rose Fam.)

Flowers, regular. *Petals*, five, not united, inserted with the stamens on the edge of a disk that lines the tube of the calyx. *Sepals*, five, united toward the base, often accompanied outside by a row of small, leaf-like bracts. *Stamens*, numerous [or in Spiræa (2) sometimes as few as ten] inserted as above. *Seed-case*, one to many, free from the calyx excepting in Pyrus (6), Cratægus (7), and Amelanchior (8), and in the Genus Rosa (5), where the many pistils are imbedded in the inner surface of the more or less rounded calyx-tube.

Leaves, usually simple [compound in Rosa (5) and in Rubus (4) excepting in one species], alternate, usually with leaf-like bracts (stipules) at the base of the leaf-stem.

GUIDE TO THE GENERA.

(*a*) Seed-case, one to many, free, and not (as in Rosa) covered in ripening by the calyx.
- (*b*) Seed-case, one. Leaves, simple. Fruit, a drupe. (1) Prùnus (Plum, Cherry).
- (*b*) Seed-cases, mostly five, one-celled, two- to several-seeded. Fruit, a follicle.
  - (*c*) Leaves, simple. (2) Spirèa (Meadow-Sweet, etc.).
  - (*c*) " lobed. (3) Physocárpus (Nine-Bark).
- (*b*) Seed-cases, numerous, crowded on a lengthened, spongy receptacle, becoming fleshy in fruit. Leaves compound (except in Flowering Raspberry). Fruit, crowded drupelets. (4) Rùbus (Blackberry, etc.).

(*a*) Seed-case, one to many, adherent to the calyx tube, or (in Rosa) covered in ripening by the calyx.
- (2) Seed-cases, many, becoming bony nutlets enclosed in the rounded, fleshy calyx-tube, and appearing like a small apple. Leaves, compound. Fruit, clustered akenes, but apparently a pome. (5) Rosa (Rose).

(2) Seed-case, one, imbedded in the fleshy calyx tube. Leaves, simple. Fruit, a pome. (6) Pyrus (Chokeberry, etc.), (7) Cratègus (Thorn, Haw), (8) Amelánchior (Juneberry).

(1) Genus PRÙNUS, Tourn. (Plum, Cherry.)

Flowers, white, in clusters, excepting in the third species (sloe), with or preceding the leaves, excepting in the fourth species (Choke-Cherry). *Petals*, five, much spreading. *Sepals*, five. *Stamens*, fifteen to twenty. *Seed-case*, one, free from the calyx, with two young seeds, only one of which usually ripens.

Leaves, simple, alternate, toothed.

Fruit, fleshy, with a bony stone.

Fig. 28.—Wild Plum. Canada Plum. Horse Plum.
P. Americàna, Marsh.

Flowers, in simple clusters of three to four blossoms, preceding the leaves.

Leaves, two to three inches long, oval to reverse egg-shape; base pointed or rounded, somewhat downy on the veins and in their angles. Bark of the main stem dark, reddish-green, or bronze-green.

Fruit, one half to two thirds inches in diameter, yellow, orange, or red, with a thick, acid skin, and a pleasant flavor. *Stone*, slightly flattened, with both edges winged and sharp.

Found, from Canada southward to Florida, and westward, and often in cultivation.

A bush (or sometimes a small tree) eight to twenty feet high, with hard, reddish wood. In cultivation it furnishes an excellent stock on which to graft the domestic plums.

Dwarf Cherry. Sand Cherry. *P. pùmila, L.*

Flowers, two to four, together.

Leaves, narrowly reverse egg-shape, tapering to the base, slightly toothed toward the apex, pale beneath.

Fruit, slightly lengthened, nearly black when ripe, usually sour and puckery. *Stone*, lengthened, without margin, the size of a large pea.

Found, from Canada to Virginia, and westward.

A drooping and trailing shrub, six inches to six feet high.

Fig. 29.—Beach Plum. *P. maritima, Wang.*

Flowers, white, two to five in each cluster, appearing before the leaves. April, May.

Leaf, one to three inches long, edge very finely toothed, outline mostly oval, light green, soft, downy beneath, especially when young, strongly net-veined. *Leaf-stem*, with two small, wart-like dots. *Bark*, very dark.

Fruit, one half to one inch in diameter, round or oval, purple or crimson. *Stone*, much swollen, sharp on one edge, on the opposite side rounded and finely grooved; edible. Ripe in August and September.

Found, on and near the sea-beach from Massachusetts to Virginia.

A straggling, much-branching bush, two to five feet high. The farther it grows from the beach, the thinner and smoother its leaves are likely to be, and its plums smaller. Its fruit is much sought in autumn for preserving. "Beach-plumming" along the coast equals in interest "chestnutting" and "huckleberrying" inland.

Prunus Alleghaniénsis. *Porter.*

Leaves, long oval to lanceolate.

Fruit, very dark purple, less than one half inch in diameter. *Stone*, with a broad flat ridge on one side, and a shallow groove on the other.

Found, on the bluffs of the Alleghany Mountains in Pennsylvania.

A straggling shrub, or sometimes a small tree, three to fifteen feet high, seldom thorny.

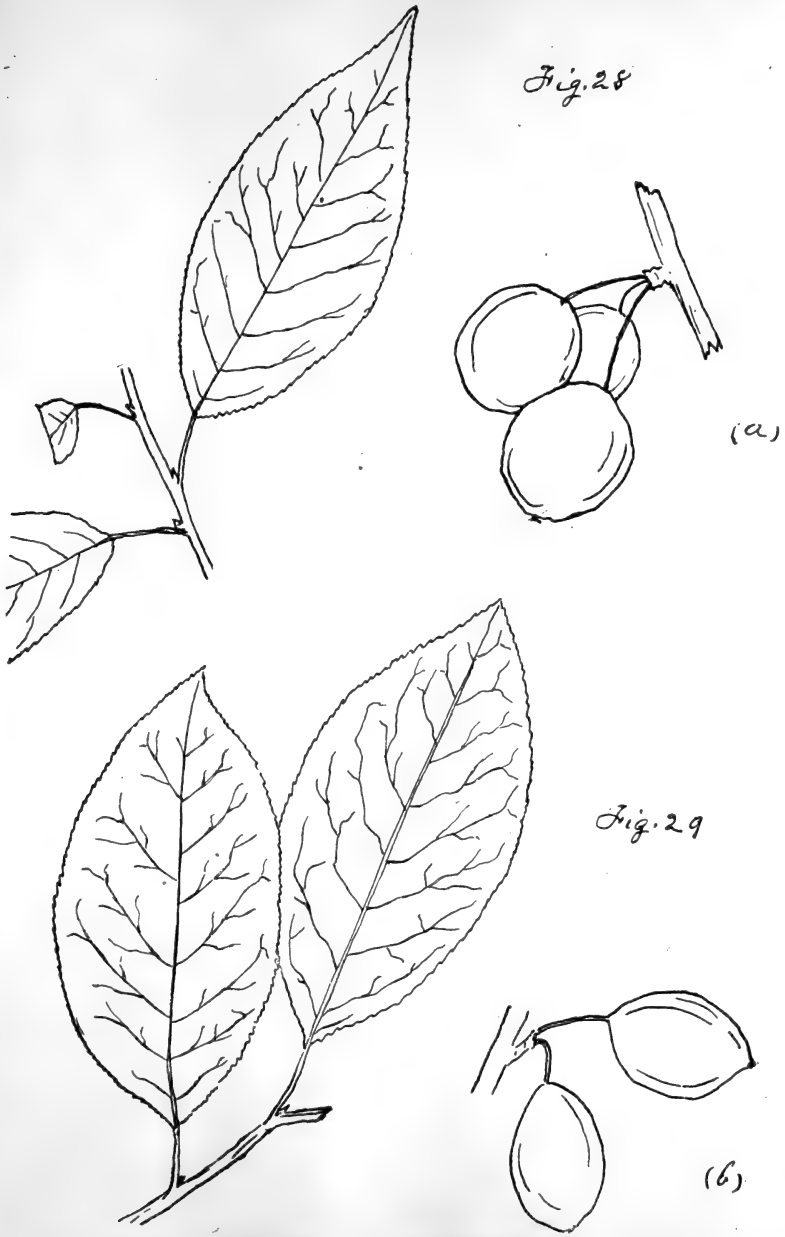


Fig. 28.—Wild Plum. (P. Americàna, Marsh.) (*a*) Fruit.
Fig. 29.—Beach Plum. (P. maritìma, Wang.) (*b*) Fruit.

Fig. 30.—Sloe. Black Thorn. [*P. spinòsa. L.*]

Flowers, white, usually solitary. *Flower-stems*, smooth.

Leaves, edge sharply-toothed or double-toothed, reverse egg-shape to egg-shape, downy beneath, becoming smooth.

Fruit, small, rounded, black. *Stone*, swollen, with one edge sharp.

Found, in waste places from New England to Pennsylvania, and New Jersey. Introduced from Europe.

A thorny shrub, twelve to fifteen feet high.

Fig. 31.—Choke-Cherry. *P. Virginiàna, L.*

Flowers, white, with short stems, set in a long, cylinder-shaped cluster at the ends of leafy branchlets, appearing after the leaves. *Petals*, rounded. May.

Leaves, two to three inches long, oval to reverse egg-shape, thin, base variable, edge finely and sharply toothed. *Leaf-stem*, usually marked with two to four wart-like dots. *Bark*, light gray or greenish on the young shoots, becoming dark gray after the first year,

Fruit, about one quarter inch in diameter, very abundant, red, becoming very dark in ripening, exceedingly astringent (puckery), but when thoroughly ripe not unpalatable. *Stone*, rounded, smooth, without margin. July, August.

Found, widely distributed in woods and hedges from Georgia westward and northward. Common, especially northward.

A shrub (or sometimes a small tree) five to twenty feet high.

Fig. 30

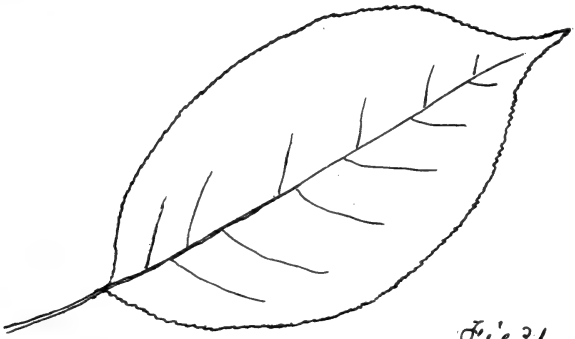


Fig. 31

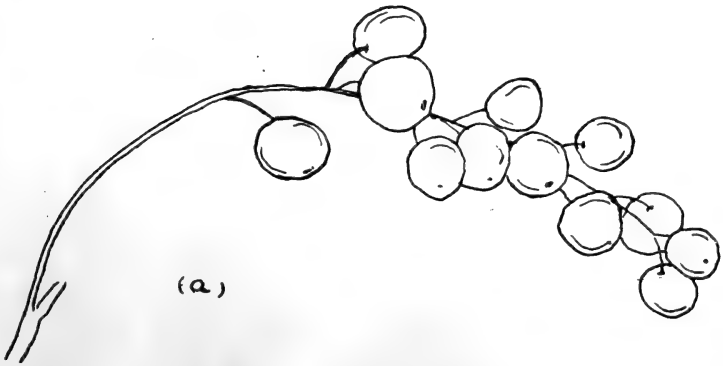


Fig. 30.—Sloe. [P. spinòsa, L.]

Fig. 31.—Choke-Cherry. (P. Virginiàna, L.) (*a*) Fruit.

(2) Genus SPIRÆA, L. (Meadow-Sweet, etc.)

Flowers, white to rose-color, crowded in rounded or pyramid-shaped or steeple-shaped clusters. *Petals*, five, reverse egg-shape. *Stamens*, ten to fifty. *Seed-cases*, mostly five, distinct, one-celled, several-seeded.

Leaves, simple, alternate, toothed.

Fruit, a dry, simple case (usually in clusters of five), with one cell and several long, slim seeds; a follicle, or a cluster of follicles.

Fig. 32.—Meadow-Sweet. *S. salicifòlia, L.*

Flowers, small, white or tinged with rose, crowded in rounded and pyramid-shaped terminal clusters. *Seed-cases*, five, smooth. July, August.

Leaves, one and one half to three inches long, smooth or nearly so, oval to reverse egg-shape, singly or doubly sharp-toothed, base pointed or rounded. *Apex*, pointed.

Fruit, as above.

Found, from Georgia northward and westward, most abundantly in low grounds.

A shrub three to four feet high, erect, with polished copper-colored or purplish brittle stem, ornamental in cultivation.

Fig. 33.—Birch-Leaved Spiræa. *S. corymbòsa, Raf.*

This species differs chiefly in the following items:

Flowers, in large, flat clusters. *Seed-cases*, three to five.

Leaves, broad oval or ovate, toothed only toward the apex.

Found, in the mountains of Pennsylvania and New Jersey, southward to Georgia, and westward to Kentucky and Missouri.

A shrub one to two feet high.

Fig. 32

Fig. 33

Fig. 32.—Meadow-Sweet. (S. salicifòlia, L.)
Fig. 33.—Birch-Leaved Spiræa. (S. corymbòsa, Raf.)

Fig. 34.—Hardhack. Steeple-Bush. *S. tomentòsa, L.*

Flowers, small, rose-colored or rarely white, crowded in steeple-shaped, terminal clusters. *Seed-cases*, five, woolly. July, August.

Leaves, crowded, egg-shape or oblong, toothed, very white-woolly beneath. *New shoots*, covered with a rusty down. *Old stems*, smooth, and of a bronze color.

Fruit, as above.

Found, in low ground from Georgia northward and westward.

A small shrub, two to five feet high, with hard, brittle stalks, that call for troublesome "hacking" on the part of the haymakers, whence one of its names. It is ornamental, and is often cultivated for its pretty, steeple-like clusters of late-blooming, rosy flowers.

(3) Genus PHYSOCÁRPUS, Maxim. (Nine-Bark.)

From two Greek words meaning "bladder" and "nut."

Fig. 35.—Nine-Bark. *P. opulifòlius (L.) Maxim.*

Flowers, small, white, often purple-tinged, in close, rounded clusters two and one half inches in diameter, each flower with a thread-like, downy stem. *Petals*, five. *Stamens*, thirty to forty. *Seed-cases*, one to five, inflated. *Young seeds*, two to four. June.

Leaves, one to two and one half inches long, three-lobed, with the lobes sharply toothed, base somewhat heart-shaped or pointed. *Bark*, gray, loose, and flaking off in thin scales.

Fruit, conspicuous, a smooth, simple case, inflated and purplish, with one cell and two ripened seeds, usually in clusters of three to five. *Seeds*, rounded, smooth, and shining. A follicle or cluster of follicles.

Fig. 34.—Hardhack. (S. tomentòsa, L.)

Fig. 35.—Nine-Bark. (P. opulifòlius L., Maxim.)

Found, oftenest on the banks of streams from Canada southward and westward, widely distributed, but rather rare in its wild state.

A beautiful shrub, three to five feet high, often and easily cultivated.

(4) Genus RÙBUS, Tourn. (Blackberry, etc.)

From a word meaning "red."

Flowers, white (excepting in the first species, Purple-Flowering Raspberry). *Petals*, five. *Sepals*, five, partly united, spreading. *Stamens*, numerous. *Seed-cases*, many, each with two young seeds, only one of which ripens, crowded on a lengthened receptacle.

Leaves, compound (excepting in Purple-Flowering Raspberry). *Stems*, often armed with prickles.

Fruit, a pulpy edible "berry" so called, formed by the ripened seed-cases. A mass of small drupes.

Fig. 36.—Purple-Flowering Raspberry. *R. odoràtus, L.*

Flowers, one to two inches across, showy, purple to rose color. *Petals*, rounded in terminal clusters. *Stamens*, one hundred to two hundred, whitish. *Calyx*, flower-stems, and branchlets, covered with sticky hairs. June, July.

Leaves, four to eight inches long, simple, three- to five-lobed, the middle lobe longest, all pointed and with their edges fine-toothed, somewhat hairy, without prickles.

Fruit, of but slight value, broad and flat, sometimes an inch across, separating from the receptacle when ripe, red, sweet when ripe. August.

Fig. 36.—Purple-Flowering Raspberry. R. odoràtus, L.

Found, from Georgia northward and westward, often in rocky places, and on the borders of dry woods.

A straggling shrub, three to five feet high. Its rose-like blossoms and its late summer flowering make it worthy of cultivation. It requires shade.

Fig. 37.—Wild Red Raspberry. *R. strigòsus, Michx.*

Flowers, small, white. *Petals*, erect, as long as the sepals. May.

Leaflets, three to five, the side ones without stems, whitish-downy beneath. *Stems*, thickly set with stiff bristles that are usually straight, but sometimes hooked.

Fruit, half round, red, when ripe falling from the lengthened receptacle, sweet, and very pleasant to the taste. June, August.

Found, especially along roadsides and in neglected fields, from Labrador to New Jersey, and westward and southward along the mountains to North Carolina.

A free-growing shrub, three to six feet high, ranking with the blackberries and huckleberries as a liberal and welcome fruit-giver for country homes. The supplies for the city markets are mostly from cultivated varieties.

Fig. 38.—Blackcap. Black Raspberry. Thimbleberry. *R. occidentàlis, L.*

This species differs from the preceding chiefly in the following items:

Flowers, with petals shorter than the sepals.

Leaflets, usually three, rarely five, the side ones sometimes with short stems.

Fruit, black, rarely whitish.

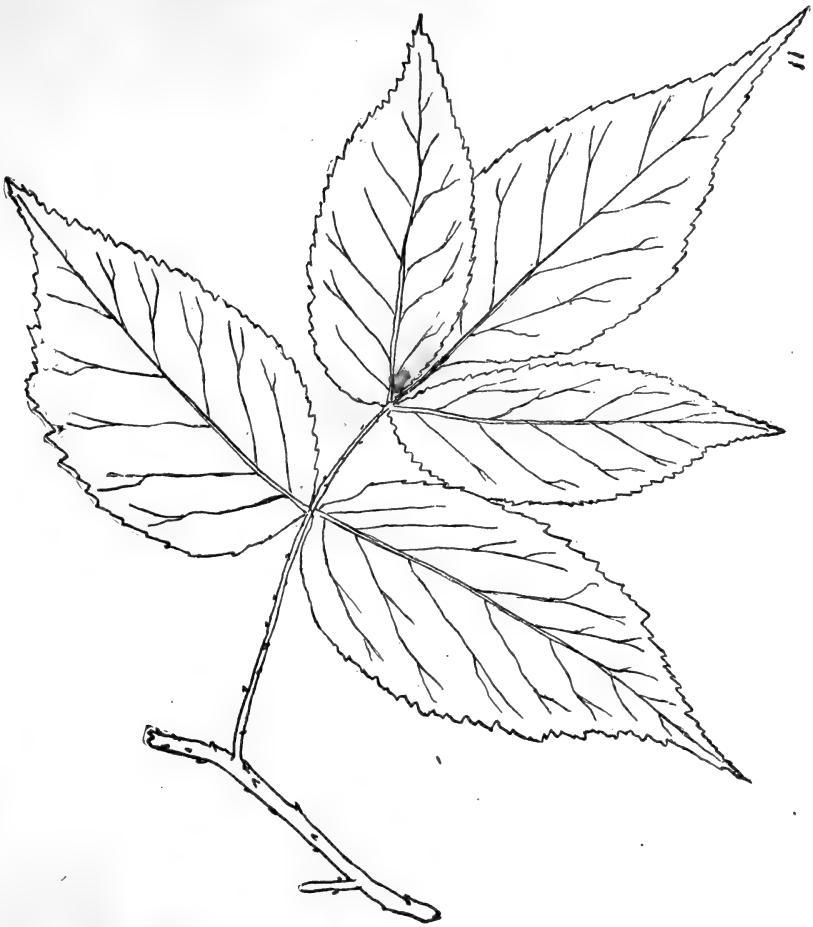


Fig 37.—Red Raspberry. (R. strigòsus, Michx.)

The shrub spreads by help of long branches which curve over and down until their tips touch the ground, and root, so forming new centres of tangled growth.

High Blackberry. *R. villòsus, Ait.*

Flowers, numerous, in clusters of about twenty blossoms. *Petals*, spreading, reverse egg-shape, much longer than the narrow, pointed sepals.

Leaflets, three (or sometimes five), usually with prickly stems, not whitish-downy beneath. *Leaves* and branchlets hairy and glandular. *Stems*, furrowed and ridged, and armed with stout curved prickles.

Fruit, oblong, black, not separating when ripe from the lengthened receptacle. August, September.

Found, oftenest along roadsides and in thickets. Common.

A scraggly, thorny bush, three to six feet high, with a very pleasant-flavored fruit. A tea from the steeped root is a home remedy for summer complaint.

Rùbus villòsus, var. frondòsus, Torr.

This variety has about ten flowers in a cluster, with petals more rounded than the last, is smoother, and has fewer drupelets in the more acid fruit. It is found with the type at the North.

Sand Blackberry. *R. cuneifòlius, Pursh.*

Flowers, white (sometimes with a rose tint). *Petals*, large, three times as long as the sepals, in two- to four-blossomed clusters. May, June.

Leaflets, three (sometimes five), stemless, somewhat wedge-shape and reverse egg-shape, whitish-downy beneath, edge entire toward the base. *Leaf-stems*, downy, often prickly, young branches downy beneath. *Stems*, round, and armed with stout, re-curved prickles.

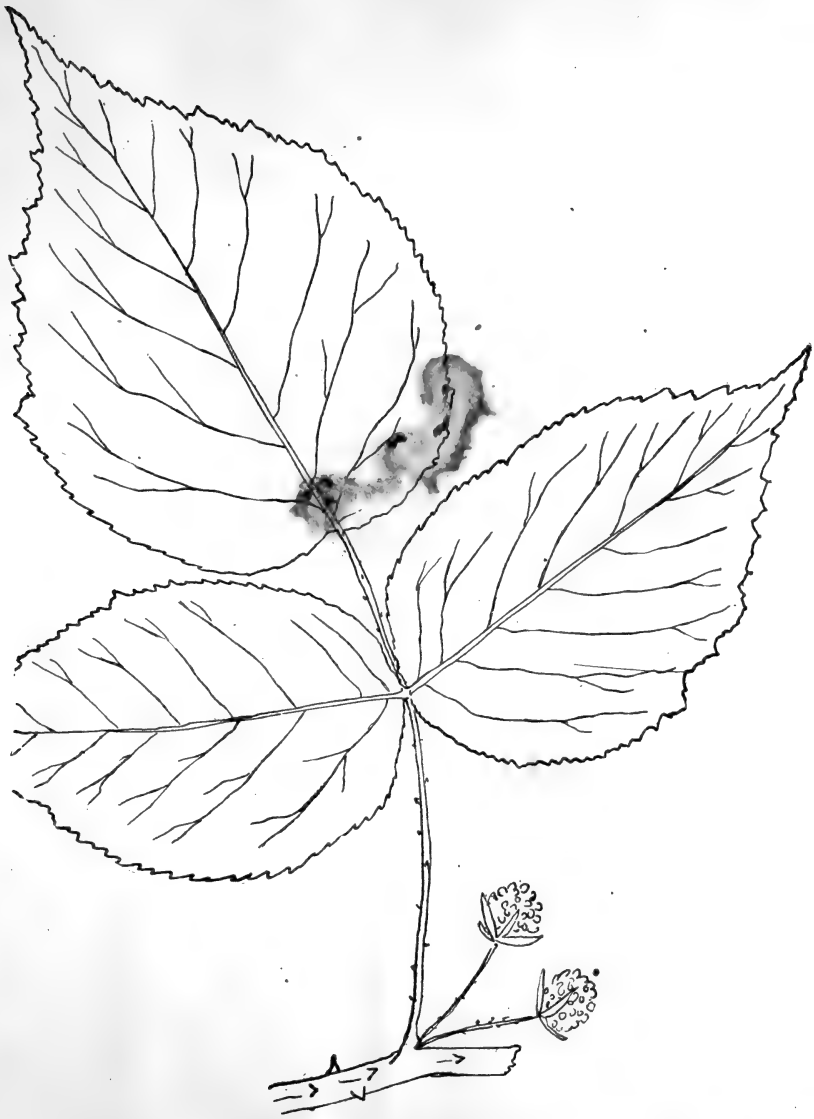


Fig. 38.—Blackcap. (R. occidentális, L.)

Fruit, black, well-flavored. July, August.

Found, in sandy woods of southern New York and Pennsylvania, southward and westward.

A shrub two to three feet high.

(5) Genus Rò̀sa, Tourn. (Rose.)

Flowers, with five reverse egg-shape or reverse heart-shape petals. *Calyx-tube*, fleshy, contracted at the throat, urn-shaped. *Stamens*, many. *Pistils*, many, embedded in the inner surface of the calyx-tube.

Leaves, compound (odd-feathered), alternate, edge of leaflets toothed, lower edges of the leaf-stem with prominent wings (stipules).

Fruit, a more or less reddish or greenish ball ("hip") enclosing the many dry one-seeded seed-cases. A covered cluster of akenes.

"If Jove would give the leafy bowers
A queen for all their world of flowers,
The rose would be the choice of Jove,
And blush, the queen of every grove."—Th. Moore.

"The rose doth deserve the chiefest and most principall place among all flowers whatsoever, . . . for his beautie, his vertues, and his flagrant and odoriferous smell.—*Gérard's Herball*, London, 1597.

"The rose is the honor and beautie of flowres,
The rose is the care and the love of the Spring,
The rose is the pleasure of the 'avenly powers:
The boy of faire *Venus*, *Cythere's* darling,
Doth wrap his head round with garlands of rose,
When to the daunces of the Graces he goes."—
Gérard's Herball, London, 1597.

"But there are many kinds of Roses differing either in the bignesse of the flowers, or the plant itself, roughnes or smoothnes, or in the multitude of the flowers, or in the fewnesse, or else in color and smell."—*Gérard's Herball*, London, 1597.

Shining Rose. *R. lucida, Ehrh.*

Flowers, pale red, generally in one to three pairs. *Petals*, large, slightly two-lobed. *Sepals*, spreading after flowering, presently falling away, the outer ones often with two small lobes; the sepals and the rounded receptacle usually hairy. June, July.

Leaves, smooth, and often shining above. *Leaf-stem*, usually somewhat hairy, and with spines between the "wings." *Leaflets*, mostly seven, acute or blunt, coarse-toothed, stemless except the end one. *Stems*, mostly greenish. *Spines*, straight or sometimes hooked, becoming stout. *Prickles*, scattered.

Fruit, rounded, red, small, depressed, with the fruit-stem glandular-hairy.

Found widely distributed in woods and thickets, and waste grounds.

A shrub usually one to three feet high.

Low Rose. *R. hùmilis, Marsh.*

This species is quite variable. It differs from the last in the following items:

Outer Sepals, always more or less lobed.

Leaflets, usually thinner and paler.

Stipules, usually narrow.

Spines, usually straight and slender.

Found, mostly in dry soil from Maine to Georgia, and westward.

Wild Rose. *R. nítida, Willd.*

This species differs from *R. lùcida* chiefly in the following items:

Flowers, solitary (rarely in twos or threes). *Petals*, red. *Sepals*, entire. June.

Leaflets, usually narrow and pointed at each end, nearly stemless excepting the end one. *Stems*, reddened by their dense covering of straight and slender prickles.

Fruit, scarlet.

Found, in swampy ground from Newfoundland to New England and New York.

A shrub one to two feet high.

Carolina Rose. Swamp Rose. *R. Carolina, L.*

Flowers, in leafy clusters of three to seven blossoms, large, red to white. *Petals*, slightly two-lobed. *Sepals*, spreading, and falling away after flowering.

Leaflets, five to nine (mostly seven), sharply and often doubly fine-toothed, dull green, not shining above, rather variable in shape. *Prickles*, mostly two at the base of each leaf-stem.

Fruit, dark red, depressed and rounded.

Found, along streams and in swamps, in damp woods and thickets from Nova Scotia to Florida, and westward.

A bushy shrub four to eight feet high with reddish stalks. A very variable species.

Fig. 39.—Bland Rose. *R. blánda, Ait.*

Flowers, usually large, clustered or solitary. *Petals*, reddish, with a small notch at the end. *Sepals*, entire, shorter than the petals, drawing together after flow-

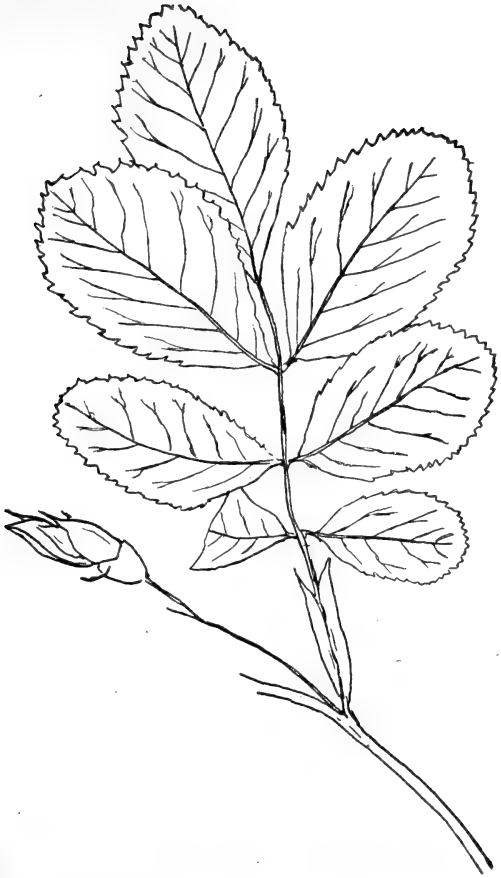


Fig. 39.—Bland Rose. (R. blánda, Ait.)

ering, and not falling off. *Bracts*, under the blossom large and downy. June.

Leaflets, five to seven, toothed, wedge-shaped at the base, with short stems, not shining above. *Leaf-stem*, unarmed. *Stems*, with a reddish bark. *Prickles*, none, or few, scattered and straight.

Fruit, rounded.

Found, among rocks and on open hills around the Great Lakes, and from Newfoundland to Central New York.

A shrub two to three feet high.

Sweet Brier. Eglantine. [*R. rubiginòsa, L.*]

Flowers, light red, mostly solitary, on short, bristly stems, fragrant. *Sepals*, hairy, with slashed or toothed edge, not falling off in ripening.

Leaflets, five to seven, one half to two thirds inches long, usually thickly covered beneath with resinous glands, very fragrant when crushed. *Leaf-stem*, hairy. *Prickles*, mostly strong and recurved.

Fruit, orange-red, oblong to reverse egg-shape.

Found, in waste fields and along roadsides from South Carolina and Tennessee northward. Introduced from Europe.

A stout shrub four to eight feet high.

(6) Genus Pȳrus, L. (Chokeberry, etc.)

Fig. 40.—Chokeberry. *P. arbutifòlia, L. f.*

Flowers, white or reddish, in clusters, usually of about twelve blossoms. *Petals*, five, roundish. *Calyx*, urn-shaped. *Styles*, united toward the base. Calyx and flower-stem downy when young. May, June.

Fig. 40.—Chokeberry. (P. arbutifòlia, L. f.)
Fig. 41.—Dogberry. P. nigra (Marsh), Sargent.

Leaves, simple, fine-toothed, downy beneath when young, marked with small reddish warts along the midvein above, oval to reverse egg-shape. *Apex*, pointed or blunt.

Fruit, dark red or purple, about the size of a small currant, rounded or pear-shaped, with five cells and ten seeds, puckery. A berry-like pome.

Found, in damp ground, often forming extensive thickets, common from Nova Scotia to Florida, and westward.

A vigorous shrub, five to eight feet high.

Fig. 41.—Dogberry. *P. nìgra (Marsh), Sargent. (P. arbutifòlia var. melanocárpa, Hook.)*

This variety differs from the preceding chiefly in these items :

Sepals, *Flower-stems*, and *Leaves*, all smooth or nearly so.

Fruit, larger, black, less puckery often mistaken by the children for large huckleberries ; ripening earlier.

Found, often in dry as well as wet ground.

A shrub one to four feet high.

From Note Book :

I.—"What do you call that, boys?"
Two Boys.—"Dogberry. It ain't good to eat!"
I.—It is n't poisonous, is it?"
Two Boys.—Yes, 't is.

Where the boys found that name I do not know, nor do I know their reasons for thinking the berry poisonous. They may have experimented, or, as men sometimes do in greater matters, they may simply have repeated a slanderous tradition. I remember that as a boy I often

found the little shrub growing among the huckleberry bushes, and was afraid of mistaking its berries for the safe huckleberries. Yet I never heard of any case of poisoning from them. I imagine that the boys were right in considering the berry not desirable for food, but I doubt their estimate of its poisonous qualities.

(7) Genus Cratægus. (Thorn. Haw.)

From a Greek word meaning "strength," because of the firmness of the wood.

Flowers, white, rarely rose color, in clusters. *Petals*, five, rounded. *Stamens*, many. *Calyx-tube*, urn-shaped. *Styles*, one to five. *Seed-cases*, one to five.

Leaves, simple, toothed, often with deep clefts, almost forming small lobes. *Stems*, armed with thorns.

Fruit, fleshy, with one to five stones, crowned by the persistent sepals. A drupe.

Sir John Mandeville visited Palestine in the 14th century. There he saw a crown which was said to be the Saviour's "crown of thorns." He comments concerning our Lord and the crown: "In that nyghte that He was taken, He was yled into a gardyn; and there He was first examyned righte scharply; and there the Jewes scorned Hym, and maden Hym a crowne of the braunches of Albespyne, that is White Thorn, that grew in the same gardyn, and setten yt on His head, so faste and so sore, that the blood ran down be many places of Hys visage, and of Hys necke, and of Hys schulders. And therefore hath the White Thorn many vertues; for he that berethe a braunche on him thereof, no thondre, ne no maner of tempest may dere him; ne in the hows that yt is inne may non evylle gost entre."

"'T is commonly say'd, in Germany, that the Witches doe meet in the night before the first day of May, upon an high mountain called the Blocks-berg; and the common people doe the night before ye said day fetch a certain Thorn, and stick it at their house-door, believing the witches can then doe them no harm."—AUBREY.

Fig. 42.—White Thorn. Scarlet-Fruited Thorn. Red Haw.
C. coccínea, L.

Flowers, about two thirds of an inch across, white (often with a rosy tinge), twelve or so in a bunch, with a strong and rather disagreeable odor. May.

Leaves, with five to nine deep cuts, almost forming small lobes, usually one and a half to two and a half inches long, but variable in size even on the same tree, thin, smooth, shining. *Base*, usually slightly pointed, but often blunt or slightly heart-shaped. *Leaf-stem*, slender (in *var. macracántha*, Dudley, stout), and often with small wart-like glands. *Branchlets*, usually greenish, or whitish as though washed with silver. *Thorns*, one to two inches long, stout, often whitish, usually slightly curved.

Fruit, nearly half an inch in diameter, rounded or egg-shape; bright red or purple, with thin pulp. Somewhat edible. September.

Found, through the Atlantic forests southward to Northern Florida and Eastern Texas.

A shrub (or often a low tree) ten to twenty feet high, with crooked and spreading branches; very common in the North, rare in the South.

Var. móllis T. and G., with its leaves downy, at least on the under side, and with its red fruit large and downy, is found from Central Michigan southward and westward.

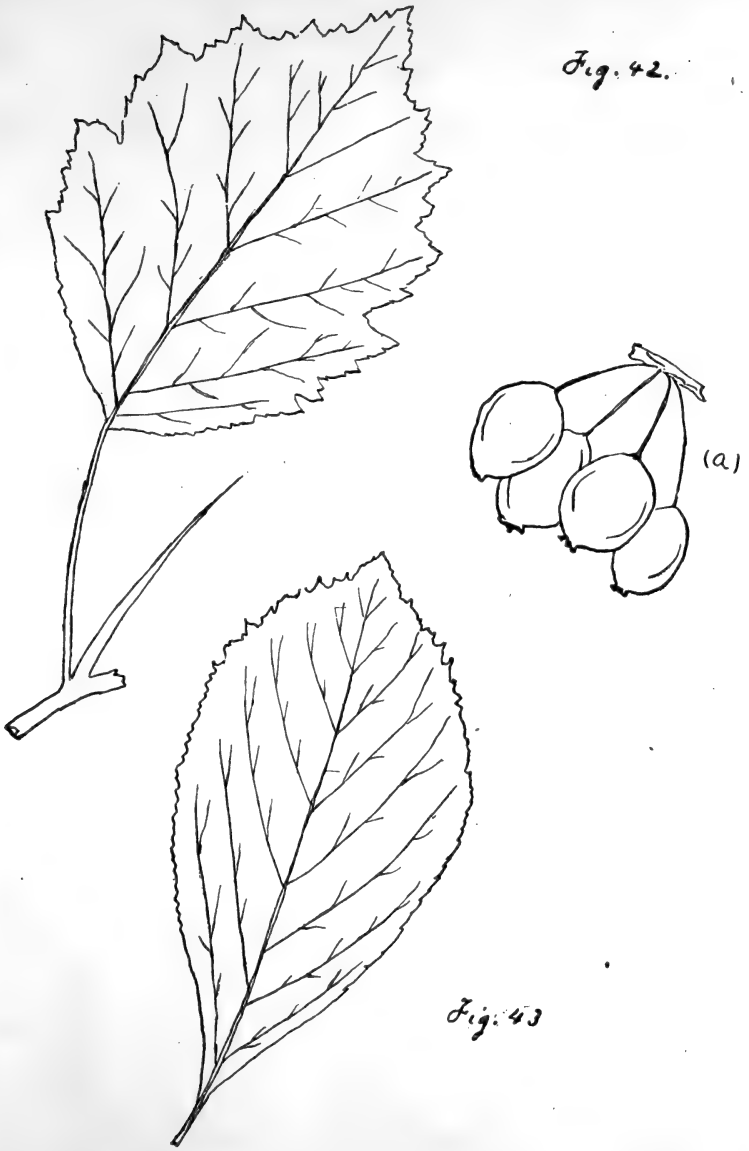


Fig. 42.—White Thorn. (C. coccínea, L.) (*a*) Fruit.
Fig. 43.—Black Thorn. (C. tomentòsa, L.)

Fig. 43.—Black Thorn. Pear Thorn. *C. tomentòsa, L.*

Flowers, often one inch across, white, eight to twelve in a cluster, fragrant. May, June.

Leaves, variable, sometimes with quite deep and sharp cuts, almost forming small lobes, about three to five inches long, oval to reverse egg-shape, tapering in a hollow curve, and along the sides of the leaf-stem to a point; under surface downy, at least when young, permanently downy on the veins. *Leaf-stem*, bordered by the leaf, to its base. *Thorns*, one to two inches long. *Bark* of trunk smooth and gray, new twigs light greenish-brown.

Fruit, about one half inch in diameter, round or pear-shaped, orange-red or crimson; edible. October.

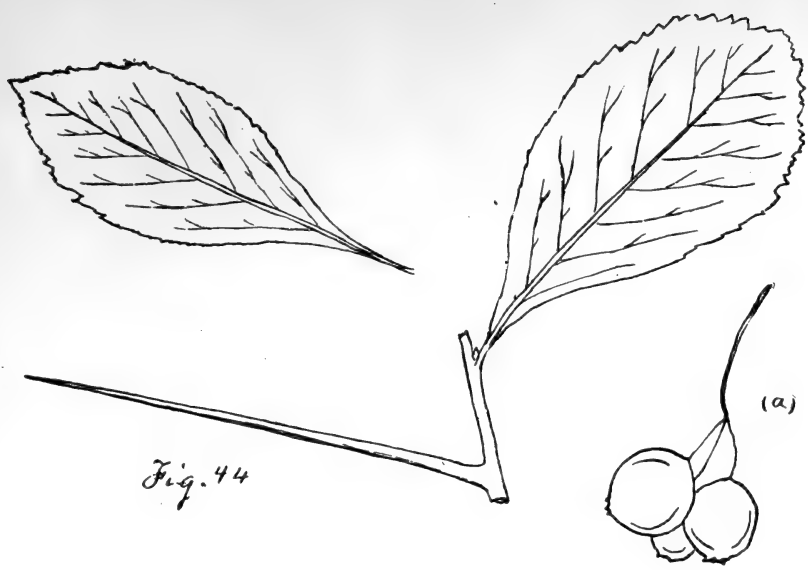
Found, through the Atlantic forests to Western Florida, and far westward; common.

A thickly branching shrub (or small tree) eight to twenty feet high, the most widely distributed of the American Thorns. It varies greatly in size and in the style of its fruit and leaves.

Fig. 44.—Cockspur Thorn. *C. crus-gálli, L.*

Flowers, white, fragrant, in clusters of about fifteen blossoms on very short side branchlets. June.

Leaves, sharply toothed toward the apex, entire below, one to two and one half inches long, thick, very smooth, and shining above, reverse egg-shape, or reverse lance-shape to somewhat oval. *Apex*, usually rounded, sometimes pointed. *Base*, tapering to a point, quite variable. *Leaf-stem*, short. *Thorns*, two to three inches long, rather slender, and straight.



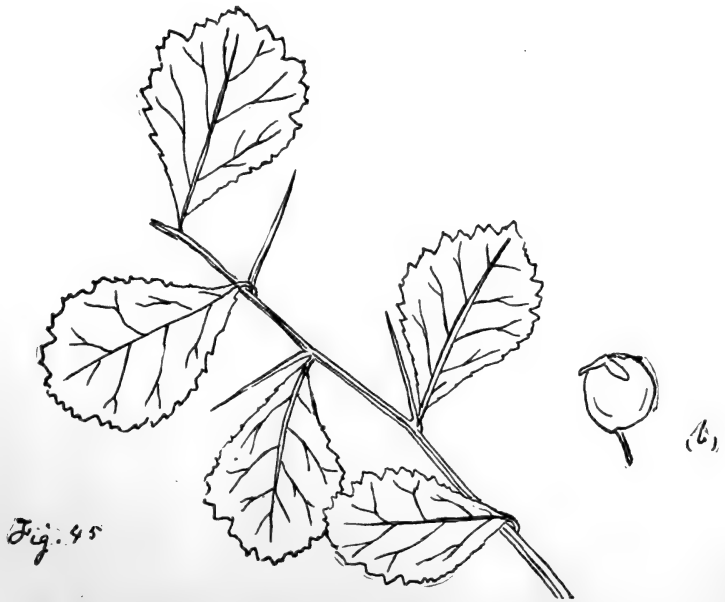


Fig. 44.—Cockspur Thorn. (**C. crus-gálli.** L.) (*a*) Fruit.
Fig. 45.—Dwarf Thorn. (**C. uniflòra, Münch.**) (*b*) Fruit.

Fruit, about one third inch in diameter, pear-shape or round, red, remaining during the winter.

Found, along the St. Lawrence and westward, and from Vermont southward and westward; not common.

A thick-branching shrub (or small tree) ten to twenty feet high. It is the best species of thorn for hedges.

Fig. 45.—Dwarf Thorn. *C. uniflòra, Münch. C. parvifòlia, Ait.*

Flowers, solitary, or two or three together, appearing with the leaves. *Sepals*, downy, with edges slashed or toothed, as long as the petals. *Styles*, five. *Flower-stems*, very short, downy. April, May.

Leaves, thick, downy when young, becoming smooth and shining above, one half to one and one half inches long, nearly stemless. *Branchlets*, downy. *Thorns*, straight and slender.

Fruit, round or pear-shape, yellowish, about one half inch in diameter; edible.

Found, in sandy soil, New Jersey and southward.

A scraggy shrub, three to six feet high.

The English Hawthorn *(C. oxyacántha, L.)* is often found in cultivation; rarely naturalized and growing wild.

(8) Genus AMELÁNCHIER, Medik. (June-berry.)

Fig. 46.—June-berry. Shad-bush. May Cherry. Service Tree. *A. Canadénsis (L.), Medik.*

Flowers, large, white, in long, loose clusters at the ends of the branchlets, appearing before the leaves. *Petals*, lengthened. *Sepals*, downy within. *Stamens*, numerous, and short. *Styles*, five, united below.

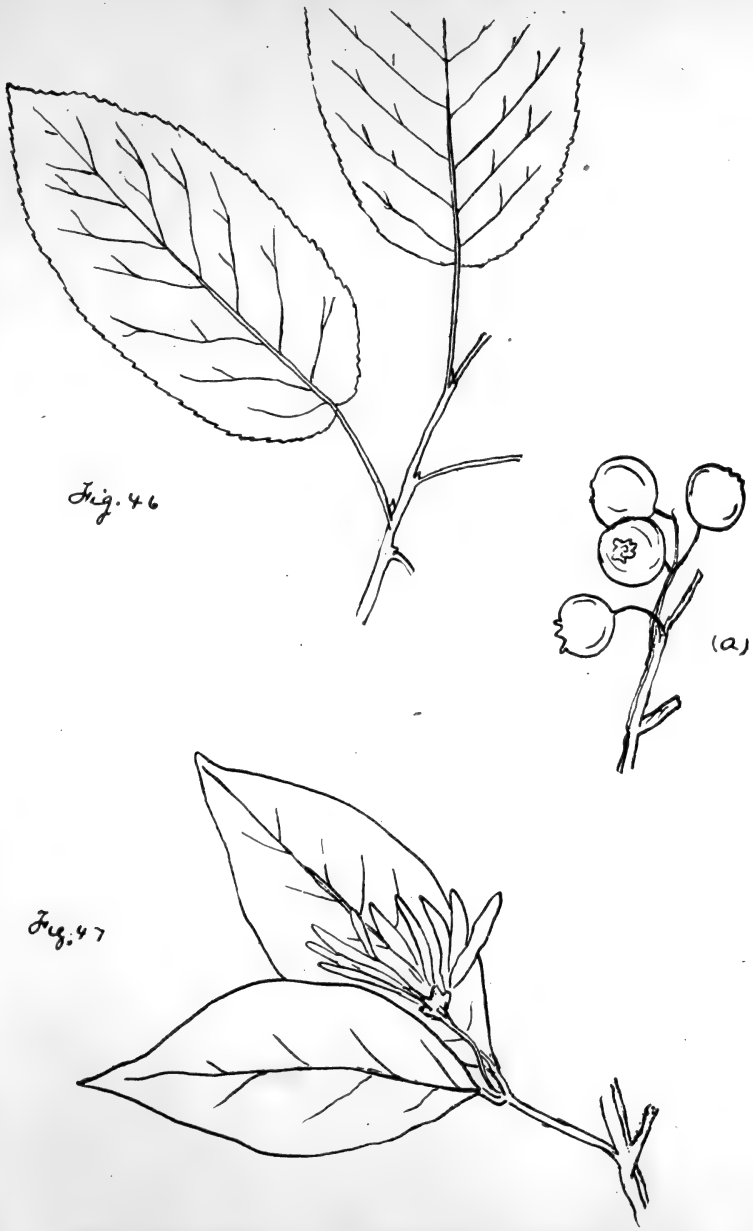


Fig. 46.—June-berry. A. Canadénsis (L.), Medik. (*a*) Fruit.
Fig. 47.—Sweet-scented Shrub. (C. nànus, Loisel.)

Seed-case, five-celled, but becoming ten-celled by false partitions, with ten young seeds, only a part of which sometimes ripen.

Leaves, variable, long egg-shape to reverse egg-shape. *Base*, slightly heart-shaped or rounded. *Apex*, sometimes bristle-pointed, usually two to three inches long, somewhat downy when young, afterward very smooth above and below. *Bark*, of branches and twigs usually purplish-brown and very smooth.

Fruit, berry-like, round, purplish, sweet, and edible. A pome. June, August.

Found, in woods and along streams, common in the North, rare in the South.

A shrub (or sometimes tree), five to thirty feet high.

A. spicàta (Lam.) Dec. (Var. oblongifòlia, Torr. and G.), *A. oligocárpa (Michx.) Roem.*, and *A. alnifòlia, Nutt.*, are smaller forms found northward.

The name "shad-bush" is given because the shrub blossoms about the time the shad "run."

15. Family CALYCANTHÀCEÆ. (Calycanthus Fam.)

Genus CALYCÁNTHUS, L.

Fig. 47.—Sweet-scented Shrub. Carolina All-spice.
C. nànus, Loisel. (C. lævagàtus, Willd.)

Flowers, reddish-brown, solitary in the axils of the leaves, fragrant when crushed. *Petals* and *sepals*, similar in color, lance-shape, rather thick and fleshy, numerous in several rows, and all united below into a fleshy cup or tube. *Stamens*, usually about twelve. *Seed-cases*, few or many, enclosed in the calyx-tube. May, August.

Leaves, simple, opposite, entire, without stipules, oblong, thin. *Apex*, blunt or taper-pointed, smooth or nearly so on both sides.

Fruit, many times larger than that of the rose, which it somewhat resembles, enclosing the one-seeded seed-case *(achènia)*, dry when ripe. A covered cluster of achenes.

Found, in Franklin County, Pennsylvania, and southward along the Alleghany Mountains.

A shrub with aromatic bark, foliage, and flowers. The flowers when crushed have a "strawberry" odor.

C. flóridus, with larger flowers and oval leaves downy beneath, is often found in cultivation, but wild only in the South.

16. Family SAXIFRAGÀCEÆ. (Saxifrage Fam.)

Flowers, in clusters. *Petals*, separate, four to five [absent in Hydrángea (1)], inserted with the stamens on the calyx. *Sepals*, as many as the petals. *Seed-case*, adherent to the calyx. *Young Seeds*, small, many.

Leaves, simple, alternate or opposite, toothed or lobed.

Fruit, one- to two-celled, many-seeded. A capsule or a berry.

GUIDE TO THE GENERA.

Leaves opposite.	(1) Hydrángea.
" alternate, edge fine-toothed; Fruit, a capsule.	(2) Ítea.
" " " lobed; Fruit, a juicy berry.	(3) Ribes (Currant, etc.).

(1) Genus HYDRÁNGEA, L.

From two Greek words meaning "water" and "vase" because of the shape of the capsule.

Fig. 48.—Wild Hydrángea. *H. arboréscens, L.*

Flowers, in clusters, those in the margin usually without petals, stamens, or pistils, and with colored sepals; central flowers white, becoming rosy, fertile, with

four or five egg-shaped petals, and twice as many stamens. *Styles*, two, diverging. *Seed-case*, two-beaked and adherent to the calyx-tube.

Leaves, opposite, toothed, without stipules, smooth or nearly so, egg-shape, or rarely heart-shaped. *Apex*, pointed.

Fruit, fifteen-ribbed, two-beaked, crowned with the two styles, two-celled in the lower part, opening by a hole between the beaks. A many-seeded capsule.

Found, from Pennsylvania westward and southward.

A very beautiful shrub, five or six feet high, often cultivated for its abundant flower clusters.

(2) Genus Ítea, Gronov.

Greek name of the "willow."

Fig. 49.—Ítea. *I. Virgínica, L.*

Flowers, white, in somewhat spike-like, terminal clusters, small. *Petals*, five, separate, lance-shaped, much longer than the calyx. *Stamens*, five, shorter than the petals. May, June.

Leaves, simple, alternate, fine-toothed, with short stems, without stipules.

Fruit, oblong, two-grooved, two-celled, tipped with the two united styles, when ripe two-parted. *Seeds*, eight to twelve, oval and somewhat flattened. A capsule.

Found, in wet places, New Jersey and Pennsylvania, and southward.

A shrub about six feet high.

Fig. 48.—Wild Hydrángea. (H. arboréscens, L.)

(3) Genus RÌBES, L. (Gooseberry, Currant.)

Flowers, small, white, greenish, or purple. *Petals*, five. *Stamens*, five. *Calyx*, often colored. *Seed-case*, united to the calyx, one-celled, many-seeded. *Styles*, two, distinct or united.

Leaves, simple, alternate, edges lobed, the lobes more or less toothed, folded fan-like in the bud. *Stem*, smooth in the currants, in the gooseberry with spines, and often with prickles.

Fruit, crowned with the remains of the calyx, many-seeded. A berry.

GUIDE TO THE SPECIES.

Flowers, greenish or purplish. Stems with thorns at the base of the leaf-stems, and usually with scattered prickles. (1 to 5) gooseberries.
Flowers, whitish. Stems without thorns or prickles. (6 and 7) currants.

Fig. 50.—(1) Prickly Gooseberry. *R. cynósbati, L.*

Flowers, greenish-white, drooping in clusters of one to three blossoms. *Lobes of the calyx*, much shorter than its tube. *Stamens*, and undivided *Style*, not longer than the calyx. May, June.

Leaves, three- to five-lobed. *Leaf-stem*, downy. *Stems*, mostly without scattered prickles, but with one to three spines near the axil of each leaf.

Fruit, large, usually armed with long prickles, brownish-purple; edible.

Found, from the mountains of North Carolina northward and westward; common.

A shrub about four feet high.

(2) Common Wild Gooseberry. *R. oxyacanthòides, L.*

Flowers, greenish or purplish, in drooping clusters of one to three blossoms. *Lobes of the calyx* much longer than the short tube. *Stamens*, scarcely as long as the broadly oblong calyx-lobes. *Style*, two-cleft. *Flower-stems*, short. May, June.

Leaves, roundish, heart-shaped, three- to five-lobed. *Spines*,

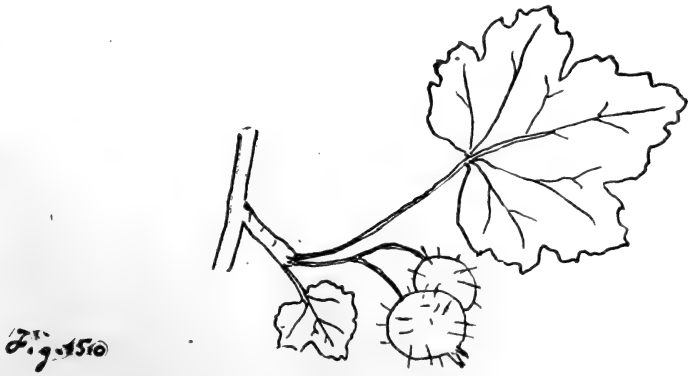


Fig. 49.—Ítea. (I. Virgínica, L.)
Fig. 50.—Prickly Gooseberry. (R. cynósbati, L.)

whitish, and often numerous. *Old bark*, often pealing off and leaving the stems unarmed.

Fruit, smooth, purple, sweet.

Found, from Newfoundland to New Jersey, and westward.

(3) **Round-Leaved Gooseberry.** *R. rotundifòlium, Michx.*

This species differs from the common wild gooseberry chiefly in these items:

Stamens, somewhat longer than the spatulate-oblong calyx-lobes.

Leaves, roundish, and not usually heart-shaped at base.

Found, from western Massachusetts and New York southward.

(4) **Missouri Gooseberry.** *R. grácile, Michx.*

This species differs from the common wild gooseberry chiefly in these items:

Stamens, becoming much longer than the narrowly oblong calyx-lobes.

Leaves, roundish.

Spines, often long, stout, and red.

Found, from Michigan to Tennessee, and westward.

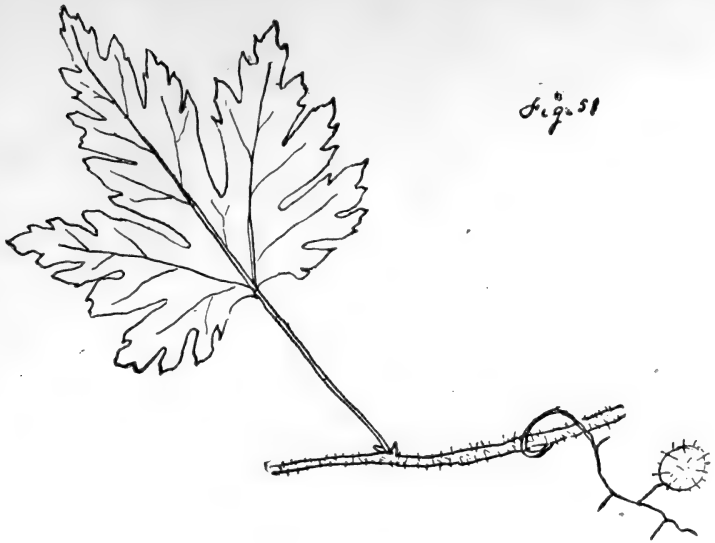
Fig. 51.—(5) **Swamp Gooseberry.** *R. lacústre, Poir.*

Flowers, in a drooping cluster of five to eight blossoms, greenish, small, flattened. *Stamens* and style not longer than the petals. *Style*, two-cleft. May.

Leaves, heart-shaped, three- to five-lobed. *Young stems*, covered thickly with reddish prickles and with slim thorns. *Old stems*, slightly armed with a few spines.

Fruit, dark-purple, small, bristly, unpleasant to the taste.

Found, in cold woods and swamps from New England northward and westward.



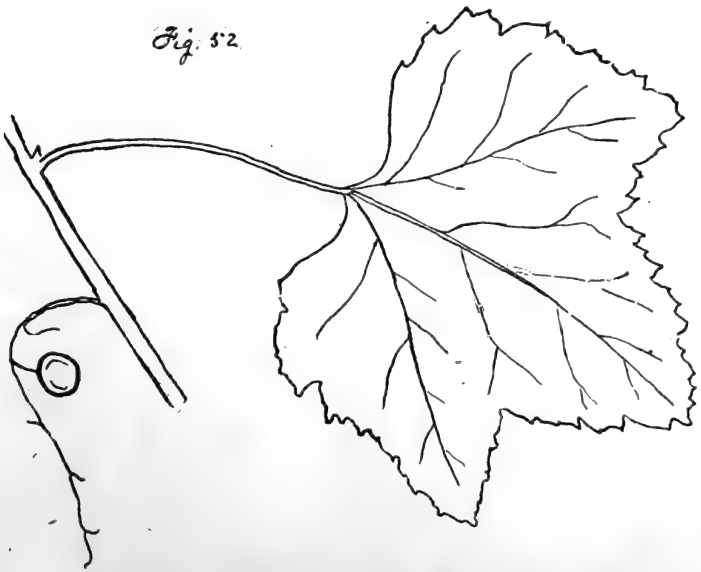


Fig. 51.—Swamp Gooseberry. (R. lacústre, Poir.)
Fig. 52.—Wild Red Currant. (R. rùbrum, L., var. subglandulòsum, Maxim.)

(6) **Wild Black Currant.** *R. flóridum, L'Her.*

Flowers, large, whitish, in drooping, downy clusters of many blossoms. *Calyx*, tubular, bell-shape, smooth. *Petals*, fringed toward the base. *Stamens*, short. *Flower-stems*, downy. *Bracts*, narrow, and longer than the flower-stems. May, June.

Leaves, three- to five-lobed, the surface marked on both sides with yellowish, resinous dots. *Stems*, without thorns or prickles, grayish.

Fruit, somewhat egg-shape, insipid, black, and smooth.

Found, in woods and hedges from New England to Virginia, and westward.

A handsome and common bush three to four feet high.

Fig. 52.—(7) Wild Red Currant. *R. rùbrum, L., var. subglandulòsum, Maxim.*

This species differs from the Black Currant (*R. flóridum*) chiefly in these items:

Flower-clusters, less downy. *Calyx*, flat.

Leaves, often with less pointed lobes.

Fruit, round, red.

Found, in swamps and damp woods from New Jersey northward and westward.

A shrub with straggling and sometimes reclining stems.

17. Family HAMAMELÍDEÆ. (Witch-Hazel Fam.)

Genus HAMAMÈLIS, L.

Fig. 53.—Witch Hazel. *H. Virgínica, L.*

Flowers, stemless, bright-yellow, in clusters of three to four blossoms, blooming profusely about the time of the ripening of the leaf. *Petals*, four, separate, about

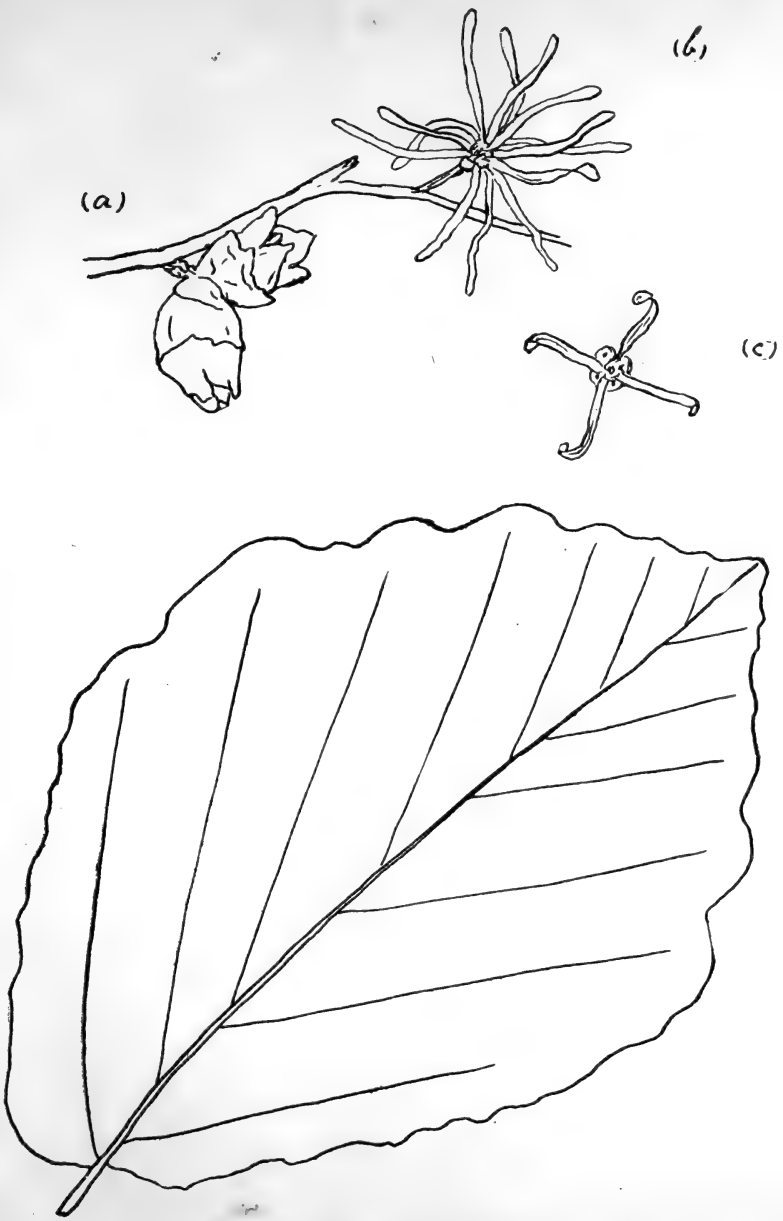


Fig. 53.—Witch-Hazel. (H. Virginica, L.)
(*a*) Fruit. (*b*) Flower-cluster. (*c*) Single blossom.

three quarters of an inch long, very narrow (strap-like) inserted on the calyx. *Sepals*, four, downy. *Stamens*, eight, very short, four of them perfect, with anthers, the others imperfect and scale-like. *Styles*, two, short. *Pistils*, two, united below, so forming a *seed-case* which is two-beaked, two-celled, two- to several-seeded, and partly adherent to the calyx. The brown scale-like remains of the flower envelopes remain in the axils of the leaves of the next year. October, November.

Leaves, simple, alternate, edge strongly wavy, at times with some of the waves sharpened, three to five inches long, rounded, oval, or inversely egg-shape. *Base*, slightly heart-shaped and unequal. *Apex*, sometimes round and sometimes with a slight blunted point, sometimes roughened with small brown hairs along the back of the veins, shiny underneath, dark green above, veins straight.

Fruit, two-celled, with two large, hard seeds (a favorite food of the partridges), ripening in the summer from the previous autumn's flowers. A nut-like capsule. September.

Found, in damp woods, very widely distributed.

A shrub six to twelve feet high, with long straggling stems and branches, well worthy of cultivation because of its uniqueness throughout.

Riding one day in a slow stage across the hills of Central New York, a fellow-passenger—a lady—gave me this bit of information: "Once when my grandfather was seriously sick, there came to visit him an Oneida Indian, who prescribed for him to his great relief. Afterward he

learned from the Indian what the medicine was,—that it was an extract of Witch-Hazel, and received directions for its preparation. He prepared it and sold it very widely, calling it from his own name 'Pond's Extract.' Now the receipt and all rights are held by a New York and London Company called the 'Pond's Extract Co.'"

One reason for the popular name of the plant is faith in its power of indicating the presence of hidden springs. A man slowly paces the ground holding a switch of the hazel. Presently he thinks he feels the stick turning strongly in his grasp. He digs at the spot indicated, very likely finds water—if he digs far enough,—and so has his belief confirmed.

The slender branches are very tough—"awful tough, so 's you can tie up rails with 'em"—as a man once described them to me.

"Among the crimson and yellow hues of the falling leaves, there is no more remarkable object than the Witch-Hazel in the moment of parting with its foliage, putting forth a profusion of showy yellow blossoms, and giving to November the counterfeited appearance of spring."

It is by far the most unique and weird-like of all our shrubs. It deserves its name.

You tangled bush
With frost-killed leaves, and yellow flowers
That outward push
In spite of ice and autumn hours;
You weird, wild thing o'-th'-woods
Ycleped witch-hazel, broods
A ghoul, I fear,
Within you here,

With witch-power fell,
That 's proof 'gainst book and bell ;—
Else how, 'mid early ice and snow
And killing cold,
Can petal-lines of living gold
Unfold them so ?
Unless, indeed, you hazel wild,
Your heart like mine,
Has learned at last the lesson mild,
The law divine,
That ice nor snow
Nor winds that blow
Can freeze the flowers
That glow
In happy hearts, and hazel bowers,—
That glow alike in darkest night
And days of light ;
You hazel-bush, whose yellow flowers,
Are spring-time smiles in autumn hours.

18. Family ARALIÀCEÆ. (Ginseng Fam.)

Genus ARÀLIA, Tourn.

Fig. 54.—Angelica Tree. Hercules' Club. Devil's Walking-Stick. *A. spinòsa, L.*

Flowers, small and whitish, in large loose clusters above the leaves at the top of the tree. *Petals*, five, not united. *Stamens*, five, alternate with the petals. *Styles*, five. *Seed-case*, adherent to the calyx, five-celled, five-seeded. July, August.

Leaves, twice or thrice compound, odd-feathered, alternate, about three feet long and one and one half feet wide. *Leaflets*, very numerous, one and a half to three inches long, sharp-toothed, egg-shape. *Base*, rounded or slightly heart-shaped. *Apex*, pointed, very prickly, rough above and below. *Leaf-stem* and *leaflet-stems*,

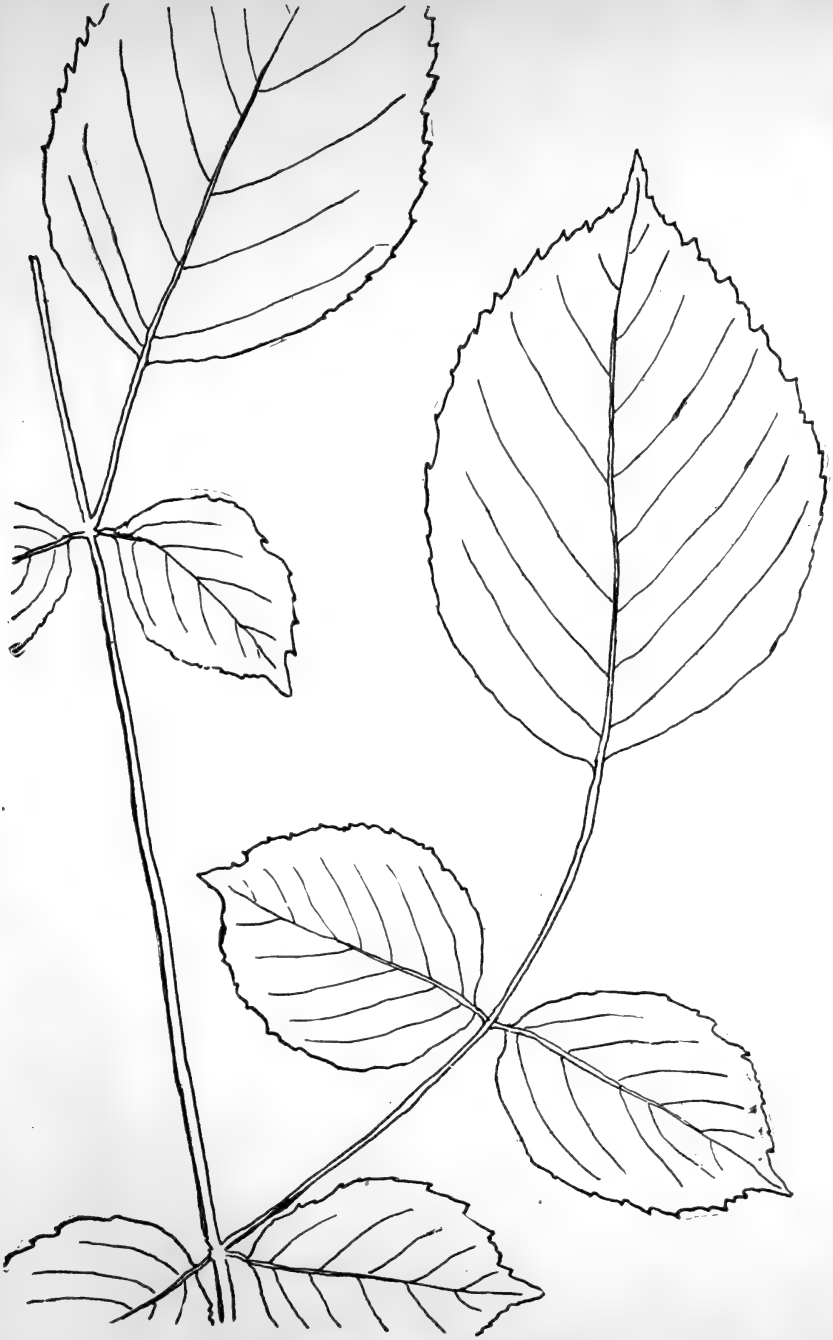


Fig. 54.—**Angelica Tree.** (**A. spinòsa, L.**)
Part of the compound leaf.

beset with remote prickles. *Stems* and *branches*, set with short, stout prickles.

Fruit, black or dark purple, five-celled, five-seeded, crowned with the remains of the calyx and styles. A berry-like drupe.

Found, on river banks and in damp woods, Pennsylvania, and Ohio, and southward, and often in cultivation.

A shrub or small tree eight to twelve feet high, with the great compound leaves mostly crowded toward the ends of the branches, and fierce with its club-like prickly stems. In the South it gains a height sometimes of twenty to thirty feet, with straight, bare trunk, showing a more palm-like style than any other of our trees.

19. Family CORNÀCEÆ. (Dogwood Fam.)

Genus CORNUS, Tourn. (Dogwood, Cornel.)

From a word meaning "horn," referring to the hardness of the wood.

Flowers, whitish, small, in flat or convex clusters. *Petals*, four, not united, oblong, spreading. *Calyx*, minutely four-toothed. *Stamens*, four. *Style*, one. *Seed-case*, one, adherent to the calyx, two-celled, two-seeded.

Leaves, simple, opposite (except in *C. alternifòlia*), entire. *Veins*, prominent, strongly and regularly curved. *Bark*, bitter and tonic.

Fruit, small, rounded, crowned with the remains of the flowers; berry-like, with a two-celled and two-seeded stone. A berry-like drupe.

Fig. 55.—Round-Leaved Cornel. Round-Leaved Dogwood. *C. circinàta, L'Her.*

Flowers, in flat loose clusters. June.

Leaves, round, oval, three to five inches long, larger than in any other of the Dogwoods, thickly white woolly beneath. *Branches*, greenish, dotted with warts.

Fruit, light blue, soft, hollow at the base. September.

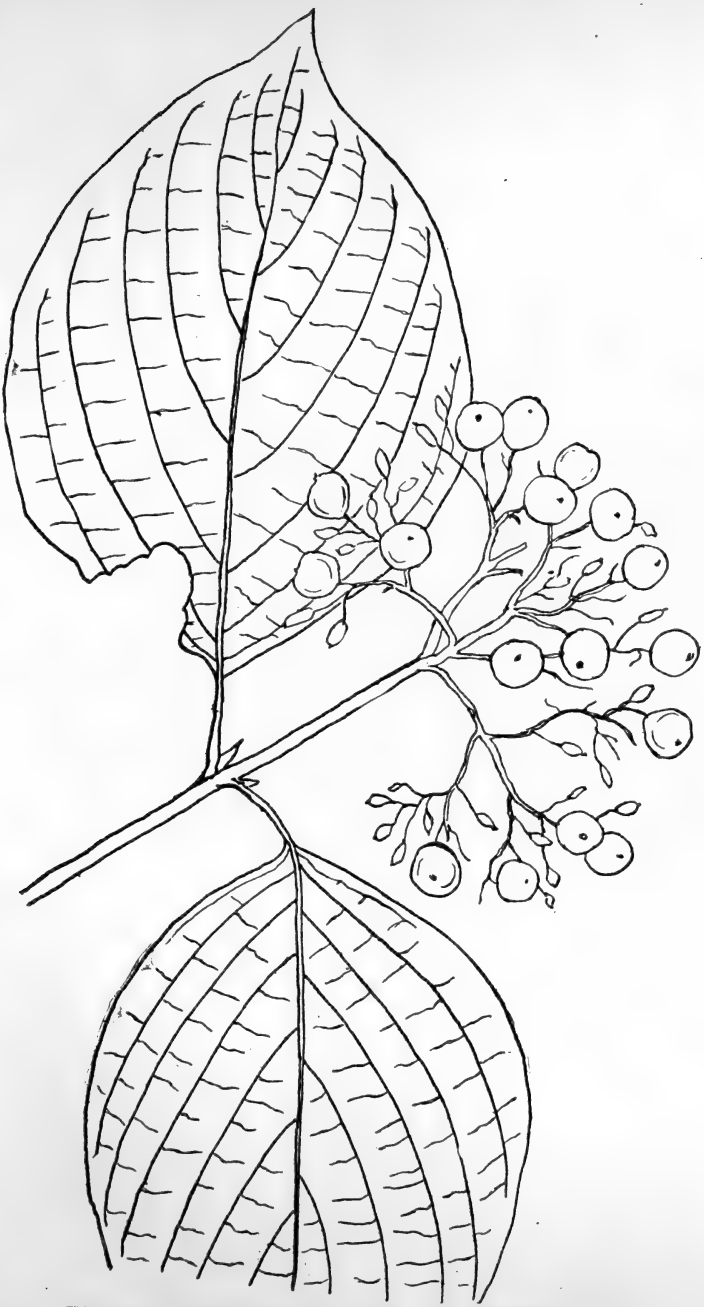


Fig. 55.—Round-Leaved Cornel. (C. circinàta, L'Her.)

Found, from Maryland westward and northward, on shady banks, and in thickets.

A shrub four to ten feet high, with straight and slender branches.

Silky Cornel or Dogwood. Kinnikinnik. *C. serícea, L.*

Flowers, in flat and close clusters. June.

Leaves, two to four inches long and half as broad, narrow egg-shape to lance-shape. *Base*, rounded and sometimes tapering, silky downy beneath. *Branches*, purplish. *Young shoots*, dark red. *Branchlets* and *stalks*, silky downy.

Fruit, blue.

Found, in wet ground, United States and Canada.

A shrub three to ten feet high.

Long-Leaved Cornel or Dogwood. *C. asperifòlia, Michx.*

Flowers, in flat clusters.

Leaves, egg-shape and oblong. *Apex*, pointed. *Base*, rounded or pointed, rough above, soft downy beneath. *Leaf-stem*, rough and rather short. *Branches*, brownish. *Branchlets*, rough.

Fruit, white, rounded, often with red stems.

Found, from the northern shore of Lake Erie to Minnesota, and southward.

A tall shrub.

Red-Osier Dogwood or Cornel. *C. stolonífera, Michx.*

Flowers, in small, flat, and smooth clusters of rather few and loosely arranged blossoms.

Leaves, broad egg-shape. *Base*, rounded. *Apex*, short-pointed, minutely downy above, whitish downy beneath. *Branches* and *branchlets*, smooth; the *shoots* (and usually the branches) reddish-purple—toward the end of winter almost blood-red.

Fruit, white or bluish-white.

Found, in wet places; common, especially northward.

A shrub three to six feet high, with slender, spreading branches. It multiplies freely by sending up long, wand-like shoots—"suckers"—soon forming broad clumps.

Panicled Cornel or Dogwood. *C. candidíssima, Marsh. C. paniculàta, L'Her.*

Flowers, in many small, loose, convex, or cone-shaped clusters. May, June.

Leaves, one to three inches long, egg-shape to long oval. *Apex*, taper-pointed. *Base*, acute or rounded, whitish beneath, not downy. *Branches*, grayish, smooth. *Shoots*, chestnut-color.

Fruit, white, rounded, the size of peas, with the stalk, when ripe, of a pale scarlet. August, September.

Found, in thickets, along river banks, etc.; common.

A shrub four to ten feet high, much branching, showy, with its abundant flower and fruit clusters.

Alternate-Leaved Cornel or Dogwood. *C. alternifòlia, L. f.*

Flowers, in wide open clusters. May, June.

Leaves, alternate, mostly clustered at the ends of the branches, egg-shape to reverse egg-shape. *Apex*, pointed. *Base*, pointed, minutely downy beneath. *Branches*, greenish, oftenest marked with white, warty streaks.

Fruit, rounded, deep blue or black on reddish fruit-stalks, much liked by the birds. August.

Found, from Georgia and Alabama, northward and westward.

A shrub or small tree ten to twenty feet high, beautiful in cultivation. The bark forms one of the "Quaker medicines," being considered diaphoretic and astringent.

CLASS FIRST—CONTINUED

(*Angiospérmæ*)

Division II

PETALS MOSTLY UNITED

(*Gamopétalous*)

20. Family CAPRIFOLIÀCEÆ. (Honeysuckle Fam.)

Flowers, variously clustered. *Corolla* of united petals, tubular or wheel-shaped, inserted on the calyx. *Stamens*, as many as the lobes of the corolla, and inserted on it. *Seed-case*, two- to five-celled, adherent to the calyx.

Leaves, simple or compound, opposite.

Fruit, a berry, drupe, or capsule.

GUIDE TO THE GENERA.

(*a*) Leaves compound.	(1) Sambùcus (Elders).
(*a*) Leaves simple, toothed or lobed (except in Withe-rod) corolla regular, fruit a one-seeded drupe.	(2) Vibúrnum (Arrow-woods, etc.).
(*a*) Leaves simple, entire. (*b*) Corolla regular; fruit a two-seeded berry.	(3) Symphoricárpos (Snowberry, etc.).
(*b*) Corolla irregular; fruit a two- to three-seeded berry.	(4) Lonicèra (Fly-Honeysuckles.)
(*a*) Leaves simple, toothed; corolla only slightly irregular; fruit a many-seeded capsule.	(5) Diervilla (Bush-Honeysuckle).

(1) Genus SAMBÙCUS, Tourn. (Elder.)

Fig. 56.—Common Elder. *S. Canadénsis, L.*

Flowers, white, small, with a heavy odor, in clusters that are flat, five to seven times parted, and five to eight inches in diameter. *Corolla*, five-cleft, with the lobes blunt. *Calyx*, small. *Stamens*, five. May, July.

Leaves, compound, opposite. *Leaflets*, five to eleven (oftenest seven), two to four inches long, egg-shape to oblong and reverse egg-shape, mostly smooth, the lower ones often two- or three-parted, with a rank

Fig. 56.—Common Elder. (S. Canadénsis, L.) (*a*) Flower enlarged.

odor when crushed. *Leaf-stems*, smooth. *Bark*, warty, that of the new shoots bright green, that of the older branches purplish-brown, or in winter light grayish. *Branches*, swollen at the joints. *Pith*, abundant and white.

Fruit, small, black-purple when ripe, round, pulpy, abundant, three-seeded, with dark, crimson juice. August, September.

Found, in waste places, often forming thickets; very common north, south, east, and west.

A shrub six to ten feet high, with weak, pithy, large-jointed branches. "In domestic medicine this plant forms almost a pharmacy in itself," flowers, leaves, leaf-buds, inner-bark, berries—all are used. Elder-blow tea (an infusion of the flowers), when cold, is alterative and laxative; when hot, an excitant. The inner bark is used in preparing ointments; the juice of the berries makes a cooling laxative drink, and is made also into a medicinal "elder-berry wine." The berries are used in cookery. The unopened flower-buds are pickled and used as a good substitute for "capers." An infusion of the juice forms a delicate test for the presence of acids and alkalies. The pith of the stems furnishes the best pith balls for electrical experiments.

Red-berried Elder. *S. pùbens, Michx. S. racemòsa. L.*

This species differs from the preceding chiefly in the following items:

Flowers, in egg-shaped or pyramidal clusters. May.

Leaflets, five to seven (oftenest five), long oval to lance-

shape, more or less downy beneath, very downy when young.

Leaf-stem, downy beneath when young, often purple above. *Pith*, brown.

Fruit, bright red (or rarely white) with a yellowish, unpleasant-tasting pulp. June.

Found, from Georgia northward and westward.

A shrub two to eighteen feet high.

(2) Genus VIBÚRNUM, L. (Arrow-wood, etc.)

Flowers, white, in flat, compound clusters. *Corolla*, spreading, and deeply five-lobed. *Calyx*, five-toothed, the lobes blunt. *Stamens*, five. *Stigmas*, one to three. *Seed-cases*, one- to three-celled.

Leaves, simple, opposite, toothed (excepting in species No. 8, Withe-rod), lobed in No. 2, Cranberry Tree; No. 3, Few-Flowered Viburnum; and No. 4, Dockmackie.

Fruit, soft, pulpy, one-celled, one-seeded. A one-seeded drupe.

GUIDE TO THE SPECIES.

(*a*) Flower-clusters with the outer blossoms imperfect (destitute of stamens and pistils).
- (*b*) Leaves not lobed — (1) Hobble-Bush.
- (*b*) leaves three-lobed — (2) Cranberry Tree.

(*a*) Flower-clusters with the blossoms perfect and alike.
- (*b*) Leaves three-lobed — (3) Few-Flowered Viburnum; (4) Dockmackie.
- (*b*) Leaves not lobed.
  - (*c*) Edge coarsely toothed, clusters stalked — (5) Arrow-wood; (6) Soft Viburnum; (7) Downy Viburnum.
  - (*c*) Edge entire or nearly so — (8) Withe-rod (*V. nudum*); (9) Withe-rod (*V. cassinoides*).
  - (*c*) Edge fine-toothed, clusters sessile — (10) Black Haw.

Fig. 57.—(1) Hobble-Bush. American Wayfaring Tree. *V. lantanòides, Michx.*

Flowers, in a sessile cluster, the outer ones showy and imperfect, lacking pistils and stamens, and with the flat corollas much enlarged (nearly one inch across); greenish, changing to white; with five rounded lobes; the inner flowers much smaller and perfect. May.

Leaves, four to eight inches across. *Veins and veinlets*, beneath, and the *leaf-stems* very brown-scurfy.

Fruit, egg-shape, bright red, becoming almost black, not acid. *Stone*, grooved. September.

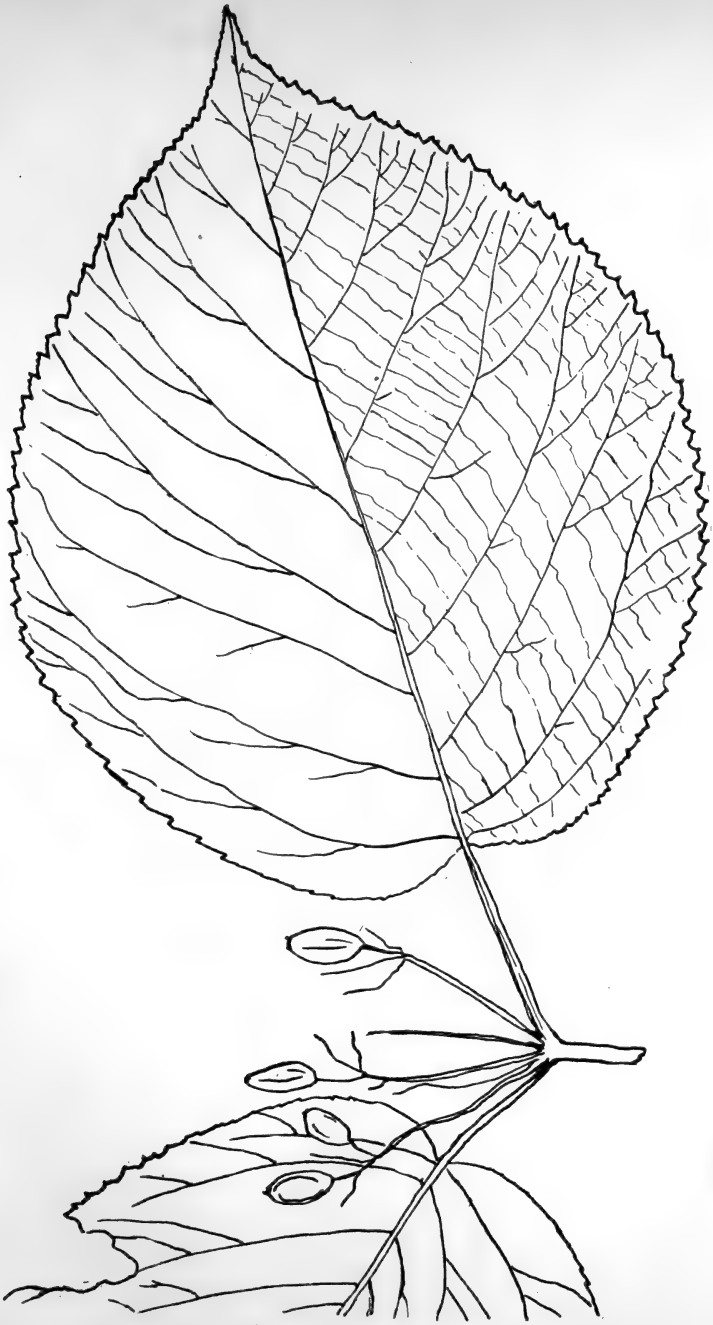
Found, in cool, damp woods, from Pennsylvania northward.

A very straggling shrub about five feet high, its long, almost rope-like branches often reclining and taking root, so forming troublesome "hobbles" for any careless wayfarer among them.

Fig. 58.—(2) Bush Cranberry. Cranberry Tree. High Cranberry. *V. ópulus, L.*

Flower-clusters, three to four inches across, resembling the last, but not sessile. June, July.

Leaves, three and one half to five inches wide, strongly three-veined from the base; three-lobed, the lobes more or less toothed along the sides, entire in the hollows. *Base*, broad, wedge-shaped, rounded, or squared. *Leaf-stem*, with small, wart-like glands near the upper end. *Stipules*, almost thread-like.



135 Fig. 57.—Hobble-Bush. (V. lantanöides, Michx.)

Fruit, about the size of a cranberry, round or egg-shape, light red, acid, ripening late and remaining after the leaves have fallen. *Stone*, very flat, not grooved. September.

Found, in borders of fields and along streams from Pennsylvania northward and westward.

A handsome shrub three to ten feet high, showy in flower and in fruit, well worthy of cultivation. The fruit, in appearance and in taste is somewhat like the cranberry, as a poor substitute for which it is often used.

The common garden "snowball" or "Guelder rose" is a cultivated form of this species, with all the blossoms in the round clusters changed to the larger imperfect form,—clusters that are described by Cowper as

> "Silver globes, light as the foamy surf
> That the wind severs from the broken wave."

(3) **Few-Flowered Viburnum.** *V. pauciflorum, Pylaie.*

Flowers, in small clusters of few blossoms on short side branches.

Leaves, somewhat three-lobed toward the end, rounded, mostly with five veins from the base.

Fruit, much as in the preceding species.

Found, occasionally in the mountains of New England, and northward and westward.

A small, straggling bush, nearly smooth throughout.

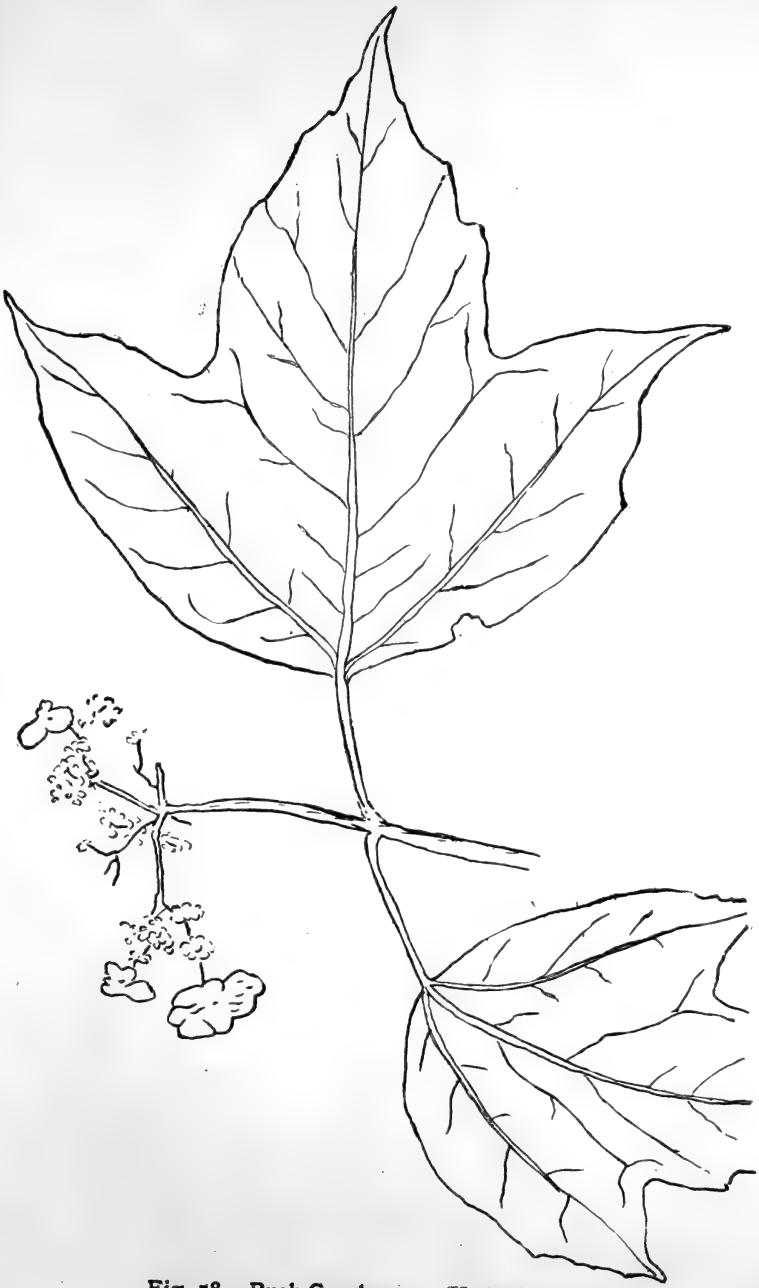


Fig. 58.—Bush Cranberry. (V. ópulus, L.)

Fig. 59.—(4) Dockmackie. Maple-Leaved Arrow-wood. *V. acerifòlium, L.*

Flowers, all perfect, in small, flat, terminal, long-stemmed clusters. *Stamens*, extending beyond the corolla. May, June.

Leaves, two to four inches long, closely resembling in shape the leaf of the red maple; strongly three-veined from the base, soft-downy beneath. *Base*, rounded or heart-shaped. *Bark*, yellowish-green.

Fruit, crimson, changing to dark-purple or black, disagreeable to the taste. *Stone*, thin, of the shape of a double convex-lens, scarcely grooved.

Found, in cool woods from North Carolina northward and westward.

A shrub three to six feet high, the branches often straight and slender, "arrow-like," and ending with a pair of leaves and the flower-cluster.

Fig. 60.—(5) Arrow-wood. *V. dentàtum, L.*

Flowers, perfect, clusters not sessile. June.

Leaves, egg-shape to rounded, mostly smooth, coarsely toothed. *Veins*, beneath prominent, straight, and usually with downy tufts in their axils. *Base*, sometimes slightly heart-shaped. *Leaf-stems*, rather slender. *Young shoots*, mostly smooth. *Bark*, ash-colored; on old stems, nearly black.

Fruit, about one quarter inch long, slightly lengthened, dark blue. *Stone*, very deeply grooved.

Found, in damp woods and thickets from Northern Georgia northward and westward; not uncommon.

A shrub five to fifteen feet high, often with straight, arrow-like shoots.

Fig. 59.—Maple-Leaved Arrow-wood. (V. acerifòlium, L.)

(6) **Soft Viburnum.** *V. molle, Michx.*

This species differs from the preceding chiefly in the following items:

Flowers, rather larger. *Clusters*, downy.

Leaves, egg-shape to reverse egg-shape, downy beneath. *Young shoots* and branchlets, downy.

Fruit, larger and more pointed. *Stones*, rather less deeply grooved.

Found, from Martha's Vineyard southward.

Fig. 61.—(7) **Downy Arrow-wood.** *V. pubéscens, Pursh.*

Flowers, rather larger than in *V. dentàtum*. *Clusters*, small and few-flowered. June.

Leaves, egg-shape. *Apex*, pointed or long-pointed. *Veins*, less marked than in *V. dentàtum*. *Leaf-stems*, very short, with two short, hairy, stipule-like appendages at base. Leaves beneath and leaf-stem downy, at least when young.

Fruit, nearly black. *Stone*, flat and slightly grooved on each side.

Found, in dry woods and thickets from Georgia northward.

A straggling shrub about six feet high.

Fig. 62.—(8) **Withe-rod.** *V. nùdum, L.*

Flowers, in large clusters with a stem one to two inches long. April, June.

Leaves, variable, two to four inches long, oval to lance-shape, edge entire or obscurely toothed, often slightly rolled; smooth, not shining, no stipule-like append-

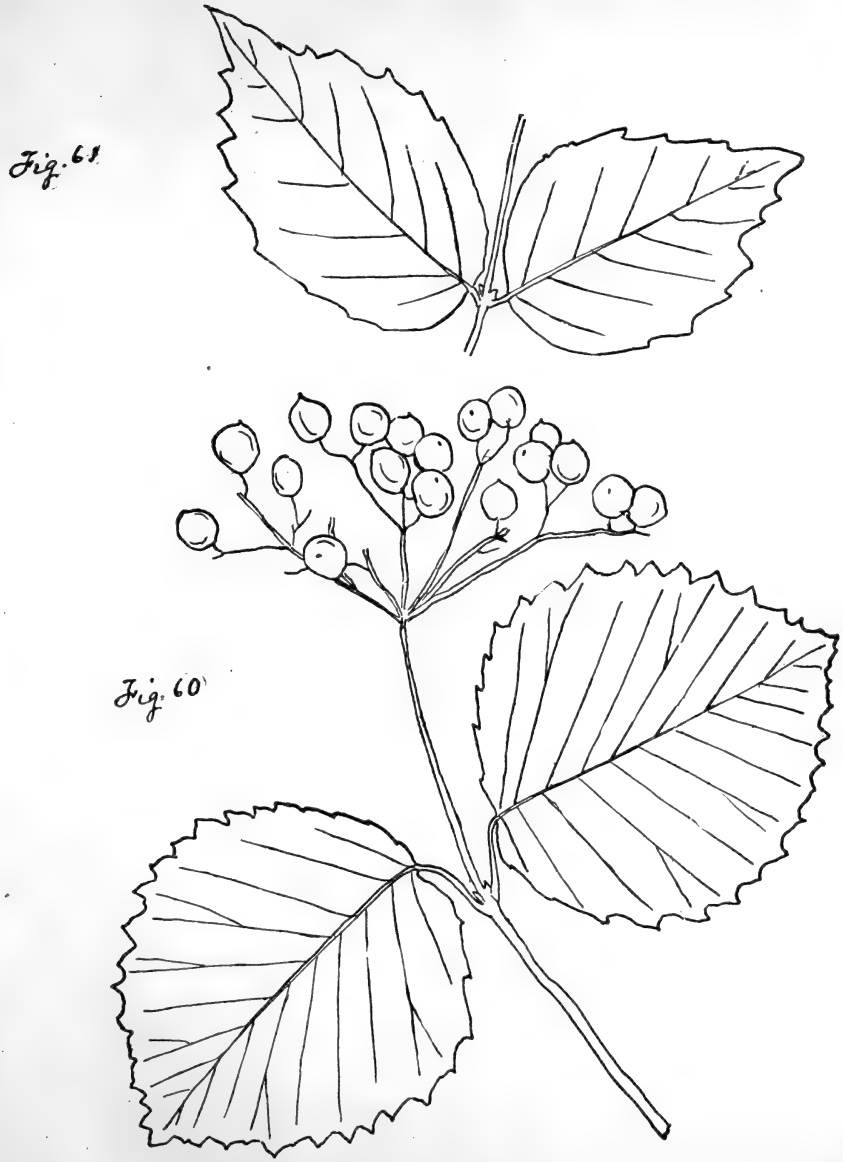


Fig. 60.—Arrow-wood. (V. dentàtum, L.)
Fig. 61.—Downy Arrow-wood. (V. pubéscens, Pursh.)

ages. *Shoots, branchlets,* etc., often slightly scurfy-dotted.

Fruit, about one quarter inch long, slightly lengthened, blackish, sweet. *Stone,* broadly oval or round, very flat and even.

Found, from New Jersey southward.

A very variable shrub (or sometimes a small tree) ten to twenty feet high.

(9) **Withe-rod.** *V. cassinòides, L.*

This species differs from the preceding *(V. nùdum)* chiefly in the following items:

Flower-cluster, usually with a shorter stem.

Leaves, one to three inches long.

Shoots, scurfy-dotted.

Found, from New Jersey northward and westward.

Fig. 63.—(10) **Black Haw. Sloe. Stag-Bush.** *V. prunifòlium, L.*

Flowers, in rather large and flat three- to five-rayed sessile clusters at the ends of the branches. May.

Leaves, one to three inches long, smooth, shining above, broadly-oval to broadly-reverse egg-shape, finely and sharply toothed. *Apex,* rounded or pointed. *Leaf-stem,* short and smooth, the edges slightly and evenly winged; variable.

Fruit, oval, blackish, sweet and eatable.

Found, in Connecticut and Southern New York, westward to Michigan, and southward.

A bush (or a small tree) ten to twenty feet high. The bark is sometimes used as a tonic.

Fig. 62.—Withe-rod. (V. nùdum, L.)
Fig. 63.—Black Haw. (V. prunifòlium, L.)

(3) Genus Symphoricárpos, Dill. (Snowberry, etc.)

From Greek words meaning "to bear together" and "fruit," because of the clustered berries.

Flowers, white with a rosy or purplish tinge in clusters or spikes, or sometimes solitary. *Corolla*, bell-shaped, four- to five-lobed. *Calyx*, with short teeth. *Stamens*, four or five, inserted on the throat of the corolla. *Stigma*, rounded. *Seed-case*, four-celled, but with only two of the cells containing perfect young seeds.

Leaves, simple, broad-oval to oblong, opposite, edge entire.

Fruit, with four cells and two seeds. A berry.

Fig. 64.—Snowberry. *S. racemòsus, Michx.*

Flowers, in a loose and often somewhat leafy terminal spike. *Corolla*, thickly-bearded within. *Stamens* and style not longer than the corolla tube ("included"). *Style*, smooth. June, August.

Leaves, smooth or nearly so, often with wavy margins.

Fruit, snow-white, the size of a large pea.

Found, native in New England and Pennsylvania, and northward and westward, and in cultivation.

A pretty bush two to three feet high, very common in cultivation, especially in old gardens, attractive, not on account of its flowers, but its white fruit.

Var. pauciflorus, Robbins, has the flower spike reduced to only one or two blossoms.

Wolf-berry. *S. occidentàlis, Hook.*

Flowers, crowded in nodding terminal or axillary spikes. *Corolla*, bearded within. *Stamens* and *Style*, longer than the corolla-tube ("exserted"). July.

Fig. 64.—Snowberry. (S. racemòsus, Michx.)
Fig. 65.—Indian Currant. (S. orbiculàris, Moench.)

Leaves, one to three inches long.

Fruit, white.

Found, from Illinois northward and westward.

A shrub two to four feet high.

Fig. 65.—Indian Currant. Coral-berry. *S. orbiculàris, Moench. (S. vulgàris, Michx.)*

Flowers, crowded in short clusters in the axils of most of the leaves. *Corolla*, only slightly bearded within. *Stamens* and style shorter than the corolla-tube ("included"). *Style*, bearded. July.

Leaves, round-oval, one to two inches long, nearly stemless.

Fruit, small, dark red.

Found, from Pennsylvania northward and southward.

A shrub two to three feet high.

(4) Genus Lonicèra, L. (Fly-Honeysuckle.)

Flowers, in pairs in the axils of the leaves, each pair with a single stalk. *Corolla*, tubular or funnel-like, often hairy at the base within, five-lobed, more or less irregular. *Stamens*, five, longer than the corolla-tube ("exserted"). *Seed-case*, two- to three-celled.

Leaves, simple, opposite, entire.

Fruit, a several-seeded berry.

Fig. 66.—Fly-Honeysuckle. *L. ciliàta, Muhl.*

Flowers, greenish-yellow, three quarters inch long. *Corolla*, funnel-form, slightly, blunt, spurred at the base. *Petals*, nearly equal. *Bracts*, two, minute at the base of the seed-case. *Stem* of the pair of flowers, slender, shorter than the leaves. May, June.

Fig. 66.—Fly-Honeysuckle. (L. ciliàta, Muhl.) (*a*) Fruit.

Leaves, from long egg-shape to oval. *Base*, variable, rounded, or slightly pointed, or often heart-shaped; thin, delicately fringed on the margin. *Leaf-stem*, slightly hairy.

Fruit, red, oblong, or egg-shape, in pairs, three- to five-seeded, distinct or sometimes slightly united.

Found, in woods from Pennsylvania northward and westward.

A shrub three to six feet high, with straggling branches set at a very wide angle.

Mountain-Fly Honeysuckle. *L. cerùlea, L.*

Flowers, yellowish. *Bracts*, two, at the base of the seed-case, awl-shaped, longer than the seed-case. *Stem* of the pair of flowers, very short—shorter than the flowers. May, June.

Leaves, small, egg-shape or oval to reverse egg-shape; hairy, especially when young.

Fruit, dark blue, the two berries united into one.

Found, in high woods from Rhode Island northward and westward.

A shrub one to three feet high.

Swamp Fly-Honeysuckle. *L. oblongifòlia, Muhl.*

Flowers, yellowish-white outside, purplish within, one half inch long, deeply two-lipped. *Corolla*, hairy. *Bracts*, two, minute or soon falling. *Stem* of the pair of flowers, slender, as long as the leaves. June.

Leaves, one to three inches in length, oblong, nearly stemless.

Fruit, rounded, purple, the two berries more or less parted at the summit, or sometimes nearly distinct.

Found, in swampy land, from New York northward and westward.

A shrub three to four feet high.

Bracted Fly-Honeysuckle. *L. involucràta, Banks.*

Flowers, yellowish. *Corolla*, one half to three quarters of an inch long, slightly sticky. *Stem* of the pair of flowers shorter than the leaves.

Leaves, two to five inches long, egg-shape or oblong, mostly pointed. *Branches*, four-angled.

Fruit, rounded, dark-purple, the two berries distinct.

Found, in deep woods from the shores of Lake Superior north and west.

Tartarian Honeysuckle. [*L. Tartárica, L.*]

Flowers, pale-purple to white, small, fragrant. April, June.

Leaves, one to two inches long, three quarters to one and one half inches wide, thick, egg-shape. *Base*, heart-shaped. *Apex*, blunt, smooth, shining, dark-green above. *Leaf-stem*, short.

Found, common in cultivation, naturalized in the vicinity of New York.

A shrub four to ten feet high, with erect, much-branching stems; elegant, and every way worthy of cultivation. Introduced from Russia.

(5) Genus Diervílla, Tourn.

Fig. 67.—Bush Honeysuckle. *D. trífida (L.,) Moench.*

Flowers, greenish-yellow, in clusters that are either terminal or in the axils of the upper leaves—usually three blossoms to each flower-stem. *Corolla*, funnel-form, five-lobed, nearly regular, twice as long as the calyx. *Calyx-lobes*, slender, awl-shaped, persistent. *Stamens*, five; stamens and style much longer than the tube of the corolla. *Seed-case*, slender, about one third inch long.

Leaves, simple, opposite, two to four inches in length, long egg-shape, toothed, taper-pointed. *Stems*, marked with two slight ridges, very noticeable in the young shoots.

Fruit, tapering above into a slender beak, which is often curved, and is crowned with the long and somewhat spreading persistent sepals. *Cells*, two (apparently four because of the intruding false partitions). *Seeds*, many. A capsule.

Found, from the mountains of North Carolina northward and westward.

An upright shrub about two feet high, very modest as compared with its showy related species, the cultivated Japanese "Weigela."

Fig. 67.—Bush Honeysuckle. D. trifida (L.), Moench. (*a*) Flower-cluster.

21. Family RUBIÀCEÆ. (Madder Fam.)

Genus CEPHALÁNTHUS, L.

From two Greek words meaning "head" and "a flower," referring to the arrangement of the round flower-clusters.

Fig. 68.—Button-Bush. *C. occidentális, L.*

Flowers, white, in dense spherical heads—each head nearly an inch in diameter, on a long stalk. *Corolla*, with united petals, tubular, four-toothed. *Calyx-tube*, inversely pyramid-shaped. *Stamens*, four, inserted on the tube of the corolla. *Style*, much exserted, long, and thread-like—nearly twice as long as the corolla. *Seed-case*, adherent to the calyx. July, August.

Leaves, variable, three to five inches long, simple, opposite (often whorled in threes), egg-shape to oblong, and reverse egg-shape, edge entire, strongly veined. *Base*, pointed or rounded. *Stipules*, short, connecting the bases of the opposite leaf-stems.

Fruit, small, inversely pyramid-shaped, dry and hard. *Cells*, two to four, each with one seed, splitting from the base upwards. September.

Found, in swamps and along streams of United States and Canada.

A vigorous shrub about four feet high. It is sometimes found on elevated ground, where it serves, it is claimed, as a good sign of the presence of hidden springs. The inner bark is sometimes used as a cough medicine.

Fig. 68.—Button-Bush. (C. occidentàlis, L.)
Fig. 69.—Groundsel Tree. (B. halimifòlia, L.)

22. Family COMPÓSITÆ. (Composite Fam.)

Genus BÁCCHARIS, L.

From "the name of the god Bacchus, possibly because of a faint wine-like odor about the plant."

Fig. 69.—Groundsel Tree. *B. halimifòlia, L.*

Flowers, whitish or yellow, tubular, in a close head of about twenty blossoms, the staminate and the pistillate forms on different bushes. *Corolla*, of the pistillate flower thread-like; of the staminate, larger and five-lobed; the hairy pappus of the pistillate flowers long and very abundant. September.

Leaves, simple, alternate, edge mostly remotely large-toothed (in the upper leaves often entire), reverse egg-shape to lanceolate. *Branches*, angled.

Fruit, one-seeded, a ribbed akene.

Found, near the sea, from Massachusetts to Georgia.

A compact shrub six to twelve feet high, worthy of cultivation because of its late blooming and its abundant "white-haired" blossoms.

Genus ÌVA, L.

Marsh Elder. Highwater Shrub. *I. frutéscens, L.*

Flowers, greenish-white, tubular or funnel-form, in small, drooping heads, each head with fine marginal, pistillate flowers, the remaining flowers staminate, pappus lacking. July to September.

Leaves, simple, fleshy, the lower ones opposite, lance-shaped, and coarsely toothed, the upper ones narrower and with entire edges, or reduced to line-like bracts.

Fruit, one-seeded (five seeds to each head). An akene.

Found, on the borders of salt marshes from Massachusetts to Florida; common.

A coarse, leafy shrub, three to eight feet high.

23. Family ERICÀCEÆ. (Heath Fam.)

Flowers, regular, or nearly so, except in *R. Rhodòra* (8). *Petals*, four to five, united, except in *R. Rhodòra* (8), *Ledum* (9), and *Clethra* (10). *Stamens*, usually as many to twice as many as the petals, and inserted with them. *Pollen*, of four united grains. *Style*, one. *Seed-case*, three- to ten-celled.

Leaves, simple, without stipules.

Fruit, a berry or a capsule.

There are not many families that contain as many beautiful plants as are found among the *Ericàceæ*. Of the true heaths, however, we have no native species. The nearest to them are our huckleberries and cranberries. These take the place throughout the northern part of America of the heaths of the corresponding climate of Europe, and they do so with as much of beauty and with far more of usefulness.

A Guide to the Genera.

(*A*) Calyx adherent to seed-case; Fruit a berry, crowned with the calyx-teeth.
- (*b*) Fruit ten-seeded — (1) Gaylussàcia (Huckleberry).
- (*b*) " many-seeded — (2) Vaccínium (Blueberry, etc.).

(*A*) Calyx not adherent to seed-case; Fruit a many-seeded capsule.

(*b*) Petals always regular, and all united.
- (*c*) Corolla cylindrical, or contracted at its mouth; Fruit, more or less globular to egg-shape. — (3) Andrómeda. (4) Leucóthoë. (5) Cassándra. (7) Menzièna.
- (*c*) Corolla saucer-shape, with ten hollows for holding the anthers. Leaves, thick and evergreen. — (6) Kálmia (Laurels, etc.).

(*b*) Petals sometimes irregular, and in *R. Rhodòra* partly separate. Corolla, spreading, funnel-shape, or bell-shape. — (8) Rhododéndron (Azaleas, etc.).

(*b*) Petals regular and separate.
- (*c*) Leaves very woolly beneath, edge entire. — (9) Ledum (Labrador Tea).
- (*c*) Leaves, smooth, edge-toothed. — (10) Clethra (Sweet Pepper-bush.)

(1) Genus GAYUSSÀCIA, H. B. K. (Huckleberry.)

Flowers, white or tinged with red, in loose lateral clusters. *Corolla*, egg-shape, tubular, or bell-shape; five-lobed. *Calyx*, yellowish-green, with resinous dots. *Stamens*, ten. *Anther-cells*, tapering upward, and opening by a chink at the end, with no small hooks at the back. *Seed-case*, ten-celled and ten-seeded, adherent to the calyx.

Leaves, alternate, entire (excepting in Box Huckleberry, and sometimes in Dwarf Huckleberry), and more or less resinous dotted (excepting in Box Huckleberry).

Fruit, black or dark blue, round, ten-celled, ten-seeded, crowned with the teeth of the calyx. A berry.

Fig. 70.—Common Black Huckleberry. *G. resinòsa (Ait.), T. and G.*

Flowers, drooping, in short, one-sided clusters. *Corolla*, contracted at the mouth, longer than the stamens, shorter than the style. *Bracts* of the flower-clusters, small, reddish, and soon falling away. *Flower-stems*, each about the length of the blossom. May, June.

Leaves, one to two and one half inches long, entire, egg-shape and oval to reverse egg-shape, pointed or somewhat blunt, thickly sprinkled—more thickly than are any other of the huckleberries—with bright resinous globules.

Fruit, black (very rarely white), sweet. August.

Found, from Northern Georgia and Tennessee northward. Common in woods and open fields.

A stiff, much-branched shrub, one to three feet high, yielding the "huckleberry" of the markets.

Fig. 70.—Common Black Huckleberry. G. resinòsa (Ait.), Torr. and Gray.
Fig. 71.—Dangleberry. G. frondòsa (L.), Torr. and Gray.

The "huckleberry pasture" is an important part of many a New England farm, and the name is a well remembered one in the memory of many a far wanderer from his early home. Those who know the stout and thickly set bushes, and who know also the ideal Christian character of many of the New England settlers, can appreciate the comment of an old lady (quoted by Ralph Waldo Emerson), who, remembering her godly ancestors, said of them "that they had to hold on hard by the huckleberry bushes to hinder themselves from being translated."

A peculiar old and shorter name for huckleberries is "hurts."

"Cape Cod is only a headland of high hills overgrowne with shrubby pines, *hurts*, and such trash, but an excellent harbour of all weathers."—Capt. JOHN SMITH, Work II.

Dwarf Huckleberry. *G. dumòsa (Andr.), T. and G.*

Flowers, each from the axil of a persistent bract, in somewhat lengthened clusters. *Bracts*, leaf-like, oval, as long as the flower-stem, and persistent. *Corolla*, bell-shape, with five prominent keel-like angles, longer than the included stamen and style. *Seed-case*, set with hairs or glands. June.

Leaves, about one and one third inches long, entire or slightly fine-toothed, reverse egg-shape, blunt, bristle-tipped. Leaves, branchlets, and flower-stems sprinkled with small hairs and glands.

Fruit, black, one third to one half inch in diameter, rather insipid. August.

Found, in swamps and thickets from Canada to Florida, mostly along the coast.

A small shrub, usually about one foot high, from a creeping base.

Fig. 71.—Dangleberry. Blue Dangle. *G. frondòsa (L.), T. and G.*

Flowers, in slender, loose clusters. *Bracts*, oblong or line-like, soon falling, shorter than the slender and drooping flower-stems. *Corolla*, round, bell-shape, longer than the included stamens. May, June.

Leaves, entire, mostly reverse egg-shape, often blunt.

Fruit, large, blue, sweet, covered with a whitish bloom when ripe. July, August.

Found, from Newfoundland to Florida, oftenest in sandy swamps.

A loosely branching shrub, three to six feet high.

Box Huckleberry. *G. brachýcera, Gray.*

Flowers, in short, close, axillary, and terminal clusters. *Flower-stems*, very short. May.

Leaves, one inch long, oval, thick, smooth, many-toothed, evergreen, resembling the leaf of the box.

Fruit, light blue.

Found, in Perry County, Pennsylvania, and southward.

A pretty evergreen about one foot high.

(2) Genus VACCÍNIUM, L. (Blueberry, etc.)

This genus differs from *Gaylussàcia* chiefly in the following items:

Flowers, with *corolla* five-toothed, excepting in Bog Bilberry, where it is four-toothed. *Anthers*, sometimes with two small, bristle-like hooks (awns) on the back. *Seed-case*, four-celled (or sometimes eight- to ten-celled by false divisions), many-seeded.

Leaves, *branchlets*, etc., less strongly or not at all marked with resinous globules.

Fruit, four- to five-celled (or sometimes eight- to ten-celled by false divisions), and many-seeded instead of only ten-seeded.

Fig. 72.—Squaw Huckleberry. Deerberry. *V. stamíneum, L.*

Flowers, nodding, greenish-white or purplish. *Flower-stems*, slender, solitary in the axils of the leaves. *Stamens*, hairy, shorter than the style, much exserted from the corolla. *Anthers*, tapering into two horns, with a hook (awn) back of each.

Leaves, one and one half to two and one half inches long, rounded or pointed, or sometimes heart-shaped at base; smallest on the flowering branches; egg-shape and oval to reverse egg-shape. *Leaf-stem*, very short and downy.

Fruit, somewhat ten-celled, nearly as large as a small cherry, greenish or yellowish, sometimes purple-tinged, round or pear-shaped, scarcely edible. September.

Found, from Canada to Florida.

A shrub two to three feet high with abundant spreading branches and drooping solitary fruit.

Fig. 72.—Squaw Huckleberry. (V. stamíneum, L.)
Fig. 73.—Common Low Blueberry. (V. Pennsylvánicum, Lam.)

Fig. 73.—Common Low Blueberry. Dwarf Blueberry.
V. Pennsylvánicum, Lam.

Flowers, usually reddish-white, one quarter inch long, in short, close clusters. *Corolla*, short, cylindrical, and somewhat bell-shaped. *Calyx-teeth*, green and spreading. *Stamens*, hairy, not exserted from the corolla. May, June.

Leaves, three quarters to one inch long, oblong to lance-shape, stemless; smooth and shining above and beneath; finely and sharply bristle-toothed. *Stems* and *branches*, green and warty, and often with a hairy line running down each side.

Fruit, large, blue, sweet, ripening earlier than that of *V. vacillans*. July, August.

Found, growing in thick patches in dry, hard soil, from New Jersey to Illinois, and northward; very common in New England.

A bush six to fifteen inches high, the lowest and the earliest of the Blueberries.

A narrow-leaved lower variety *(var. augustifòlium, G.)*, is found on the White Mountains of New Hampshire and far northward.

Var. nigrum, Wood, has the leaves dark green, the berries black and shining.

V. Canadénse. *Kalm.*

This species differs from the preceding *(V. Pennsylvànicum)* chiefly in the following items:

Leaves, entire, downy beneath, and at least on the veins above. *Branchlets*, reddish-green and downy.

Found, from Maine and New Hampshire westward and northward.

Low Blueberry. *V. vacíllans, Solander.*

Flowering-branches, two to three inches or more in length, and without leaves, so that often much of the plant is leafless though covered with fruit.

Leaves, egg-shape to reverse egg-shape, edge entire or very finely toothed. *Branchlets*, yellowish-green, angular, and closely set with white dots.

Fruit, ripening later than that of *V. Pennsylvànicum*, August.

Found, in dry ground from New England westward and southward.

A bush one to two and one half feet high.

Fig. 74.—Common High Blueberry. Swamp Blueberry. *V. corymbòsum, L.*

Flowers, in short clusters, appearing with or before the leaves. *Corolla*, more or less cylindrical, about one quarter to one third inch or more in length. *Stamens*, shorter than the corolla ("included"), hairy. *Style*, slightly exserted. May, June.

Leaves, variable in shape and size, mostly smooth, acute at each end, entire. *Branches*, green or purple. *Flowering-branches*, often almost leafless.

Fruit, large, blackish or purplish, slightly acid. August, September.

Found, in shady swamps and thickets from Canada to Florida.

A shrub five to ten feet high. It furnishes the late blueberry of the markets. A very variable species.

A marked variety *(var. atrocócum, G.)* has the under surface of the leaves, even when old, and the branchlets downy or woolly.

Bog Bilberry. *V. uliginòsum, L.*

Flowers, axillary, drooping, single, or two to three together, nearly sessile. *Corolla*, short, four-cleft, urn-shape. *Stamens*, eight, smooth. *Anthers*, with a slender hook (awn) back of each of the two horns. June, July.

Leaves, one quarter to one third inch long, dull, reverse egg-shape to oblong, entire. *Apex*, rounded or pointed, crowded toward the ends of the branches.

Fruit, four-celled, deep-blue or black, oblong, sweet, crowned with the style.

Found, on the mountain summits of New England and New York, the shores of Lake Superior, and northward.

A low, spreading shrub, four inches to two feet high.

V. cæspitòsum, Michx; *var. cuneifolium*, Nutt; *V. myrtillòides*, Hook; and *V. ovalifòlium*, Smith, are forms of Bilberries with the blossoms solitary, nodding on short axillary stems, the parts of the flower in fives; stamens, ten; the leaves more or less toothed. They are found on the shores of Lake Superior and northward.

(3) Genus Andrómeda, L.

Named with reference to the story of Andromeda (see below).

Flowers, mostly white, in clusters. *Corolla*, rounded, five-toothed. *Calyx*, without bracts. *Stamens*, ten. *Anthers*, attached near the middle. *Anther-cells*, opening by a pore at the end. *Seed-case*, free from the calyx.

Fig. 74.—Common High Blueberry. (V. corymbòsum, L.) (*a*) Flower-cluster.

Leaves, simple, alternate, entire (or in *Privet Andrómeda*, *A. ligustrina*, sometimes fine-toothed).

Fruit, globular to egg-shape, five-celled, many-seeded ; a capsule.

Fig. 75.—Marsh Andrómeda. Wild Rosemary. *A. polifòlia, L.*

Flowers, nearly round, crowded in terminal drooping clusters. *Corolla*, about one quarter inch long, rose-tinted. *Calyx*, white, tipped with red. *Anther-cells*, each terminating in a slender ascending awn. *Flower-stems*, about one half an inch long, pearl-white, springing from pointed and hollowed bracts of the same color at their base. June.

Leaves, evergreen, very narrow to oblong lance-shape, one to three inches in length by one sixth to one quarter of an inch in width ; very smooth, edges rolled back, thick, dark-green above, whitish beneath.

Fruit, globular, five-celled, many-seeded. A capsule.

Found, in wet ground from New Jersey and Pennsylvania to Minnesota, and far northward.

A very interesting evergreen shrub, six inches to two feet high.

Linnæus, in his *Tour in Lapland*, describes this shrub and tells why he chose for it the poetical name of Andrómeda :

"*Andrómeda polifòlia* was now (June 12) in its highest beauty, decorating the marshy grounds in a most agreeable manner. The flowers are quite blood-red before

Fig. 75.—Marsh Andrómeda. (A. polifòlia, L.) (*a*) Blossom slightly enlarged.

Fig. 76.—Stagger-Bush. (A. mariàna, L.)

they expand, but when full-grown the corolla is of a flesh-color. . . . As I contemplated it, I could not help thinking of Andromeda as described by the poets; and the more I meditated upon their descriptions, the more applicable they seemed to the little plant before me. Andromeda is represented by them as a virgin of most exquisite and unrivalled charms. . . . This plant is always fixed on some little turfy hillock in the midst of the swamps, as Andromeda herself was chained to a rock in the sea, which bathed her feet as the fresh water does the roots of the plant. Dragons and venomous serpents surrounded her, as toads and other reptiles frequent the abode of her vegetable resembler. As the distressed virgin cast down her blushing face through excessive affliction, so does this rosy-colored flower hang its head, growing paler and paler until it withers away. . . . At length comes Perseus in the shape of summer, dries up the surrounding water, and destroys the monsters."

Fig. 76.—Stagger-Bush. *A. mariàna, L.*

Flowers, about five twelfths of an inch long, nodding in clusters on leafless branchlets. *Corolla*, somewhat egg-shape, white or pale red. *Calyx*, about two thirds as long as the corolla, parted nearly to the base. *Stamens*, two-toothed near the anthers, hairy, without awns. June and July.

Leaves, one to three inches long, smooth, oval, or oblong, acute at each end or sometimes with the apex rather blunted.

Fruit, egg-shape, with the narrowed end squared, as though cut off; five-celled, five-angled, many-seeded. *Seeds*, angular. A capsule. October.

Found, in dry places, in woods, etc., from Rhode Island and Pennsylvania southward.

A shrub two to three feet high, worthy of cultivation. Its common name is due to its reputation for poisoning young cattle.

Fig. 77.—Privet Andrómeda. *A. ligustrìna, Muhl.*

Flowers, scarcely one sixth of an inch long, downy, globular, white, crowded in terminal clusters; the clusters usually leafless, sometimes with two small leaflets at the base. *Flower-stems*, downy. *Anthers*, without awns. June, July.

Leaves, one to three inches long, entire or fine-toothed, more or less downy, reverse egg-shape and oval to lance-shape.

Fruit, globular, five-celled, five-angled, many-seeded; a capsule. September.

Found, in swampy ground from Canada southward; Common.

A shrub three to ten feet high.

(4) Genus Leucóthoë, Don.

Fig. 78.—Leucóthoë. *L. racemòsa (L.), Gray.*

Flowers, white, fragrant, with very short stems crowded in long, one-sided, usually erect spikes, mostly at the ends of the branches, each spike two to four inches long, with twelve to thirty downward-turned blossoms. *Corolla*, five-toothed, cylindrical or somewhat egg-shaped. *Calyx*, with two egg-shaped

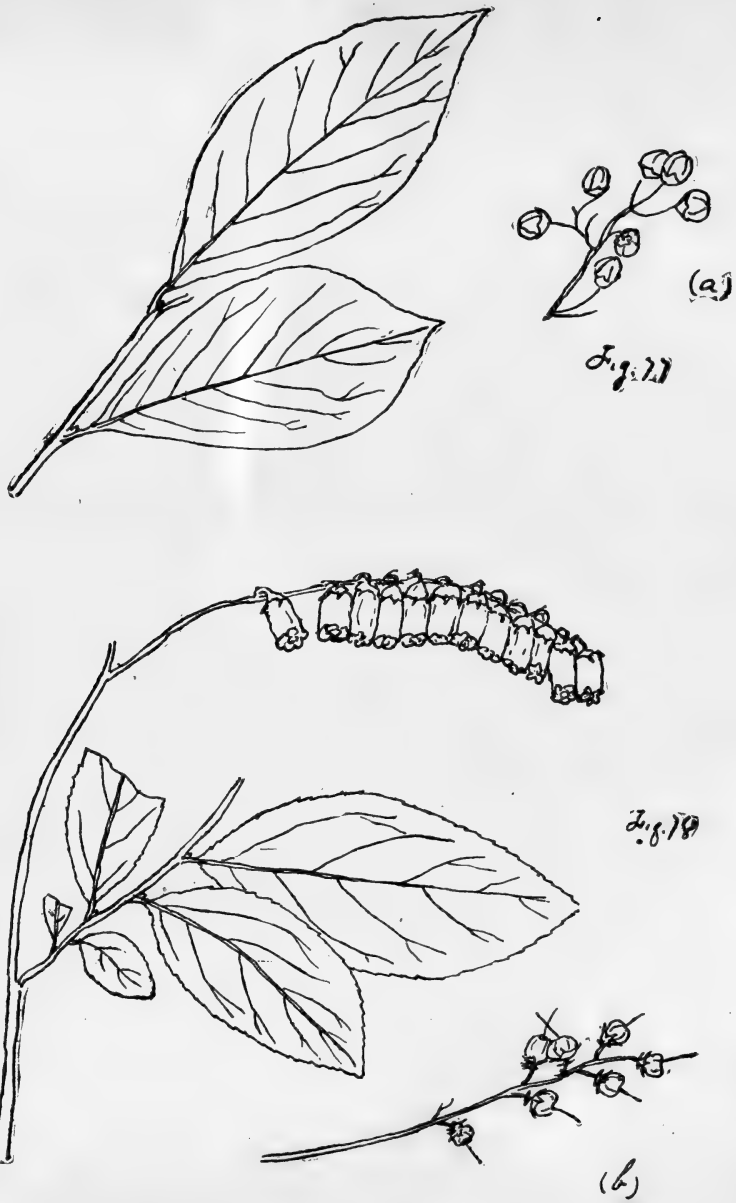


Fig. 77.—Privet Andrómeda. (A. ligustrina, Muhl.) (*a*) Fruit.
Fig. 78.—Leucóthoë. L. racemòsa (L.), **Gray.** (*b*) Fruit.

pointed, persistent *bracts* at base. *Stamens*, ten. *Anther-cells*, each with two awns at apex. *Seed-case*, free from the calyx. June, July.

Leaves, one to two and one half inches long, alternate, smooth, oblong to oval or reverse egg-shape, more or less pointed, fine-toothed. *Leaf-stem*, about one twelfth of an inch long.

Fruit, globular, depressed, five-celled, many-seeded, with the remains attached of the calyx and its two bracts and the long style. *Seeds*, angled not winged. A capsule.

Found, in moist woods and thickets from Canada to Florida, mostly near the coast.

A shrub four to ten feet high. The dry brown fruit-spikes of the previous year, with persistent calyx and bracts and style, often remain among the blossoms and green leaves of the new season. The plant is well worthy of cultivation.

(5) Genus Cassándra, Don.

Cassandra was a daughter of Priam and Hecuba.

Fig. 79.—Leather-Leaf. Cassandra. *C. calyculàta (L.), Don.*

Flowers, white, with short stems, solitary in the axils of the twenty to thirty small upper leaves, so forming a long, one-sided leafy spike. *Corolla*, cylindrical, five-toothed. *Calyx*, with two persistent, egg-shaped bracts at its base. *Stamens*, ten. *Anther-cells*, each tapering into a beak that opens at its apex, without awns. *Seed-case*, free from the calyx. April, May.

172 Fig. 79.—Leather-Leaf. C. calyculàta (L.), Don.

Leaves, about one inch long and half as wide (those of the flower-spikes smaller), oblong; blunt or slightly pointed; entire or very slightly toothed; shiny and dotted above, rusty beneath; mid-vein prominent, others scarcely noticeable.

Fruit, depressed, five-celled, many-seeded, with the covering of the seeds in two layers, the outer splitting at length into five parts, the inner into ten. *Seeds*, flattened, wingless. July.

Found, in wet places from Newfoundland to Minnesota, and southward to Georgia, often in large beds.

A nearly evergreen shrub two to four feet high.

Formerly Cassandra was included in the genus *Andromeda*. Inasmuch as Linnæus had given the latter name to the sweet little Lapland flower which he discovered—because it reminded him by its surroundings of the story of Andromeda chained in the midst of the waves—Don, when he rearranged the species chose the new name "Cassandra," to retain the classic suggestion.

(6) Genus KÁLMIA, L. (American Laurel.)

From the name of Peter Kalm, a pupil of Linnæus.

Flowers, showy, in clusters. *Corolla*, five-lobed, wheel- to bell-shaped, with ten pits for holding back the ten elastic stamens. *Calyx*, smaller than the ripened seed-case; persistent after the other parts of the

flower have fallen. *Seed-case*, not adherent to the calyx.

Leaves, evergreen, opposite or alternate, entire, thick.

Fruit, mostly round, five-celled, many-seeded. A capsule.

Fig. 80.—Mountain Laurel. Calico-Bush. Spoon-Wood.
K. latifòlia, L.

Flowers, three quarters to five sixths of an inch across, rose-colored to white, in large, many-blossomed, terminal clusters, crowning the last year's leaves; sticky. May, June.

Leaves, mostly two to four inches long, oftenest alternate, sometimes opposite or in threes; shining, smooth on both sides. *Side-veins*, imperceptible below. *Bark*, in the larger specimens in short, rounded, and often flaky ridges, curiously forked at their ends. *Wood*, crooked, fine-grained, compact.

Fruit, rounded, five-celled, imperfectly five-angled, set with sticky hairs. September.

Found, usually in damp woods from Canada and Maine to Ohio and Kentucky, and in all the Atlantic States southward to Georgia.

One of our most beautifully flowering shrubs, evergreen, four to eight feet high, or sometimes even twenty feet in height, with crooked and twisting stems and branches. The leaves and juices are narcotic, and are said to be poisonous to browsing cattle. Well worthy of cultivation.

"When the clumps of Mountain Laurel are in bloom it is worth while going out of one's way to see them."

Fig. 80.—Mountain Laurel. (K. latifòlia, L.)

Xenophon, in his *Retreat of the Ten Thousand*, tells how numbers of his warriors were poisoned through eating honey made by bees that had foraged among the abundant "laurel" flowers. The species may have been *Azàlea Pòntica.*

Fig. 81.—Sheep Laurel. Lambkill. *K. angustifòlia, L.*

Flowers, about one half or two thirds smaller than those of the Mountain Laurel, closely resembling them, but of a deeper crimson and growing in small clusters at the sides of the branches in the axils of the last year's persistent leaves, and surmounted by the new leaves. May, July.

Leaves, one to two inches long, opposite in threes and in pairs, edge entire. *Apex* and *base*, slightly pointed or rounded; light green above, in winter often reddish-green or yellowish; below, whitish or pale. *Surfaces*, smooth. *Side-veins*, indistinct.

Fruit, rounded, depressed, five-celled, often clinging throughout the winter, its stems recurved. September.

Found, common, in rough fields and by ponds and marshes, from Canada to Carolina, and west to Kentucky, often in large patches.

A very pretty upright evergreen shrub one half to two feet or rarely four feet high. The leaves of this species also are said to be poisonous to cattle.

Pale Laurel. *K. glauca, Ait.*

Flowers, resembling in general the other laurel flowers, smooth, one half inch across, pale purple, in terminal clusters of eight to ten blossoms. *Flower-stems*, smooth. June.

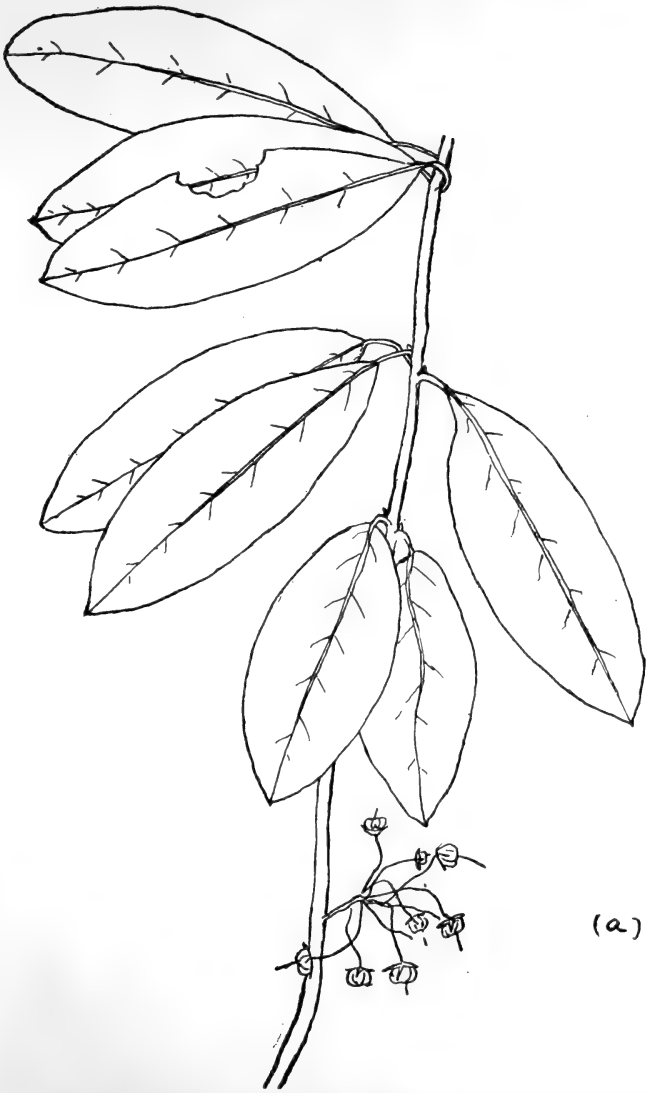


Fig. 81.—Sheep Laurel. (K. angustifòlia, L.) (*a*) Fruit.

Leaves, about one inch long, varying in width from scarcely one eighth to one half an inch, opposite, and often in threes, entire, with edge rolled back, nearly stemless. *Branchlets*, distinctly two-edged by ridges which extend from the bases of each pair of leaves to the pair below.

Fruit, somewhat egg-shape, smooth.

Found, mostly in swampy land from Kentucky and Pennsylvania far northward.

A straggling shrub, one to two feet high.

(7) Genus MENZIÈSIA; Smith.

Flowers, greenish-white or purplish, small, nodding in terminal clusters. *Corolla*, four-lobed. *Stamens*, eight. *Seed-case*, not adherent.

Leaves, alternate, reverse egg-shape. *Branchlets*, straggling, usually hairy and rusty.

Fruit, egg-shape, four-celled, many-seeded. A capsule.

The genus is represented by two species :

M. globélla, Gray, found from Minnesota Point, Lake Superior northwestward ; and

M. globulàris, Salisb., found in the Alleghany Mountains from Pennsylvania southward.

(8) Genus RHODODÉNDRON, L. (Azaleas, etc.)

From a Greek word meaning " Rose-tree."

Flowers, showy, in terminal clusters. *Corolla*, deeply five-lobed (in *R. Rhodòra* two petals are wholly separate) ; often slightly irregular (or in *R. Rhodòra* very irregu-

lar); bell or funnel-form. *Stamens*, twice as many as the petals, or of the same number (or in *R. nudiflòrum*, five to seven). *Stamens* and *style* more or less exserted and declined, except in *R. máximum*. *Anther-cells*, opening by a round pore at the end. *Seed-case*, free from the calyx.

Leaves, chiefly alternate and entire.

Fruit, five-celled, many-seeded. *Seeds*, scale-like. A capsule.

Fig. 82.—Clammy Azalea. White Swamp Honeysuckle. Swamp Pink. *R. viscòsum (L.), Torr.*

Flowers, appearing after the leaves, white or rose-color, very fragrant, very sticky, in clusters of six to twelve blossoms. *Corolla*, downy, funnel-form; tube about one inch long, nearly twice as long as the lobes. *Calyx*, minute. *Stamens*, five, slightly exserted from the tube. *Anthers*, nearly twice as long as in the Purple Azalea (*R. nudiflòrum*). *Style*, much longer than the stamens. June, July.

Leaves, one to two inches long, alternate or in groups of five to six at the ends of the branchlets, reverse egg-shape to lance-shape, smooth, except at the delicately bristle-fringed margins and mid-vein. *Leaf-stem* and *branchlets*, bristly. *Apex*, often tipped with a brown, hard point.

Fruit, as above.

Found, in damp woods and swamps from Canada to Florida and Arkansas, mostly near the coast.

A shrub four to seven feet high. "Few flowers have been more valued and more frequently cultivated in European gardens than this."

Var. glaucum (Pursh.), G., found from New England to Virginia, has paler and sometimes rough-hairy leaves.

Var. nitidum (Lam.), G., found from the mountains of New York to Virginia, is a dwarf form with reverse-lanceolate leaves.

Smooth Azalea. *R. arborèscens, Torr.*

Flowers, rose-color, very fragrant. *Corolla*, funnel-form, with the tube longer than the lobes; not at all or very slightly sticky. *Calyx*, conspicuous, as much as one sixth of an inch long, lobes oblong and acute. The five *stamens* and the *style* much exserted. *Scales* of the flower-buds large, yellowish-brown, and fringed. *Blossoms*, appearing after the leaves. May, July.

Leaves, very smooth on both sides, shiny above; the edges delicately bristle-fringed. *Branchlets*, smooth.

Fruit, as above.

Found, from the mountains of Pennsylvania to North Carolina.

A shrub ten to twenty feet high.

Fig. 83.—Purple Azalea. Pinxter-Flower. *R. nudiflòrum (L.), Torr*

Flowers, one and one half inches across, very variable in color, white, pink, purple, buff, mottled; usually fragrant. *Corolla*, funnel-form. *Tube* (nearly one inch long), scarcely longer than the large lobes; downy, slightly sticky. *Calyx*, small and hairy.

Fig. 82.

Fig. 83.

(a)

181 **Fig. 82.—Clammy Azalea. R. viscòsum (L.), Torr.**
Fig. 83.—Purple Azalea. R. nudiflòrum (L.), Torr. (*a*) Fruit.

Stamens, five to seven, twice as long as the tube, downy below the middle. *Style*, about three times as long as the tube. *Blossoms*, appearing with or before the leaves. April, May.

Leaves, reverse egg-shape to reverse lance-shape, downy beneath. *Young branchlets*, hairy, and often in whorls.

Fruit, as above. August.

Found, in woods and wet land from Canada to Florida and Texas; common, especially southward.

A crooked-stemmed, much branched shrub, with many varieties in cultivation.

Var. polyándra has ten to twenty stamens.

Flame-Colored Azalea. *R. calendulàceum, Torr.*

This species differs especially in the following items:

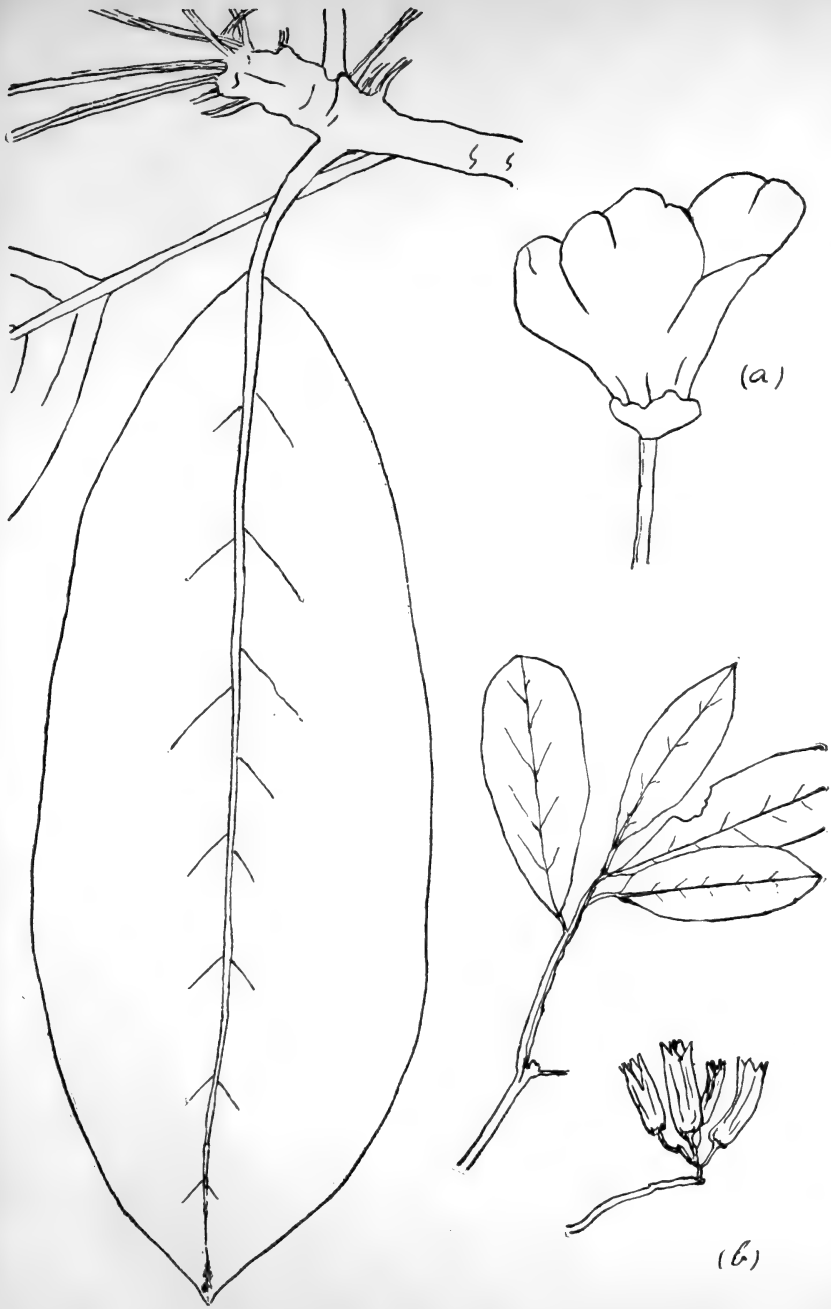
Flowers, one and one half to one and two thirds inches across, orange, changing to flame-color; abundant, covering the bush as the leaves are appearing; not fragrant, not sticky. *Corolla*, with its tube shorter than the lobes.

Found, from the mountains of Pennsylvania to Georgia.

It has many varieties in cultivation.

Fig. 84.—Rose Bay. Great Laurel. Rhododendron. *R. máximum, L.*

Flowers, very showy, one to two inches broad, rose color or nearly white, sometimes dotted with yellow, in large clusters of fifteen to twenty blossoms at the ends of the branches. *Corolla*, bell-shaped, slightly irregular. The ten *stamens* and the *style* rarely exserted. *Flower-stem*, somewhat sticky. July, August.



183 **Fig. 84.—Great Laurel.** (**R. máximum, L.**) (*a*) Flower.
Fig. 85.—Rhodòra. (**R. Canadénse, B. S. P.**) (*b*) Fruit.

Leaves, four to ten inches long, thick, alternate, mostly crowded at the ends of the branches, edge entire, dark and very smooth, and polished above, below paler, and often slightly rusty, the edges somewhat rolled.

Fruit, as above.

Found, not common in New England and New York; very common, especially along woody streams, in the mountains of Pennsylvania and southward. It is never found on limestone formations.

A magnificently flowering evergreen six to twenty feet high, with irregular, straggling branches, and hard and very fine-grained wood. It is the glory of the woods and glens where it appears. It is often cultivated, and easily, if it is sheltered from the sun.

Fig. 85.—Rhodòra. *R. Canadénse (L.), B.S.P., (R. Rhodòra, Don).*

Flowers, about one inch in length, irregular, in terminal clusters of three to five stemless blossoms. *Corolla*, purplish-rose, with scarcely any tube, split into two parts, the back part with three lobes, the front part of two nearly or quite distinct petals. *Calyx*, small, persistent. The ten unequal *stamens* and the *style* the length of the corolla. *Blossoms*, appearing before the leaves. April, May.

Leaves, oblong to somewhat reverse egg-shape, pale, more or less downy. *Bark*, smooth and brown.

Fruit, as above; oblong and downy. *Seeds*, oblong and winged.

Found, in moist ground from Canada to the mountains of Pennsylvania.

A shrub one to three feet high, each stem divided into several branches; these, while still entirely leafless, bearing at their ends showy clusters of rosy blossoms.

I remember the first Rhodòra I ever saw; it was growing on a flat bit of land, close by the low bank of the Penobscot—a bush on fire, without a sign of green about it.

> "Rhodora! if the sages ask thee why
> This charm is wasted on the earth and sky,
> Tell them, dear, that if eyes were made for seeing,
> Then beauty is its own excuse for being.
> Why thou wert there, O rival of the rose!
> I never thought to ask, I never knew;
> But in my simple ignorance suppose
> The self-same power that brought me there brought you."
>
> RALPH WALDO EMERSON.

Lapland Rose Bay. *R. Lappónicum, Wahl.*

Flowers, violet-purple, dotted, about two thirds of an inch across, regular, in terminal, leafy clusters of few blossoms. *Corolla*, open, bell-shape. *Stamens*, five to ten, exserted. June, July.

Leaves, evergreen, thick, crowded, about one half an inch long and half as wide, elliptical, alternate; edge entire and revolute. *Apex*, blunt, roughened above and below with hollowed rusty scales. *Branches*, dotted, like the leaves, with rusty scales.

Found, on the high mountain summits of New England and New York, and northward to the Arctic coasts.

A thickly spreading evergreen shrub six to ten inches in height.

(9) Genus LEDUM, L.

Fig. 86.—Labrador Tea. *L. latifòlium, Ait.*

Flowers, white, small, in terminal clusters of about twelve or more blossoms. *Corolla*, of five separate petals, spreading and reverse egg-shape. *Calyx*, minute. *Stamens*, five to seven. *Anthers*, opening by terminal pores. *Seed-case*, not adherent to the calyx. May, July.

Leaves, one to two inches long, oblong or narrow-oblong, alternate, entire, margins strongly rolled, persistent; smooth above, very thickly covered beneath with a dense white or rusty wool.

Fruit, oblong, pointed, five-celled, many-seeded, splitting from the base upward; a capsule.

Found, in mountain woods and cold, damp ground from Pennsylvania to New England, westward and northward.

A shrub one to three feet high, easily recognized by its woolly-lined leaves. The leaves are very astringent, and have been used as a substitute for tea.

An introduced species found in Labrador and northwestward is *L. palústre*, *L.*, with narrower leaves, ten stamens, and shorter fruit.

Fig. 86.—Labrador Tea. (L. latifōlium, Ait.) (*a*) **Fruit.**

(10) Genus CLÉTHRA, Gronov.

Fig. 87.—Sweet Pepper-Bush. White Alder. *C. alnifòlia, L.*

Flowers, small, white, fragrant, in abundant terminal upright spikes from three to five inches in length. *Corolla* of five separate reverse egg-shaped petals. *Calyx*, whitish-downy, five-parted, persistent. *Stamens*, ten, usually exserted beyond the corolla. *Anthers*, arrow-shape. *Style*, slender, and three-cleft at the apex. *Flower-stems*, about one sixth of an inch long from the axil of a bract of about the same length, whitish-downy. *Seed-case*, not adherent to the calyx, but enclosed by it. July and August.

Leaves, two to about three or more inches long, alternate, edge-toothed, but entire toward the base, strongly straight-veined, mostly smooth, reverse egg-shape to oval with wedge-shaped base. *Leaf-stem*, short and downy.

Fruit, rounded, enclosed in the calyx, three-celled, many-seeded. *Seeds*, angular. A capsule.

Found, in swamps and low grounds from Eastern Canada to Georgia; most abundant near the coast.

A shrub three to eight feet high, often in large patches, filling the air with its heavy odor. Its fragrance and late blooming, as well as its showy flower-spikes, make it deserving of a place in the garden. Its clusters increase in size under cultivation. It is highly prized in England.

Fig. 87.—Sweet Pepper-Bush. (C. alnifòlia, L.)

24. Family OLEÀCEÆ. (Olive Fam.)

Genus CHIONÁNTHUS, L. (Fringe-Tree.)

From two Greek words meaning "snow" and "flowers."

Fig. 88.—Fringe-Tree. Old Man's Beard. *C. Virgínica, L.*

Flowers, snow-white, in long, loose, drooping clusters. *Petals*, four, nearly an inch in length, very narrow, barely united at the base. *Calyx*, four-parted, very small, persistent. *Stamens*, two, very short. *Style*, one, notched. *Seed-case*, free from the calyx, two-celled, with four young seeds (only a part ripening). April, June.

Leaves, simple, opposite, three to six inches long, edges entire, smooth; outline oval to reverse egg-shape, very variable. *Apex*, pointed or sometimes rounded.

Fruit, one half to two thirds of an inch long, oval, purplish, one-celled, one- to three-seeded; a drupe.

Found, along streams from New Jersey and Southern Pennsylvania, southward.

A shrub six to ten feet high, or often a low tree; common in cultivation and very ornamental. The leaves are supposed to be useful as a tonic in fevers.

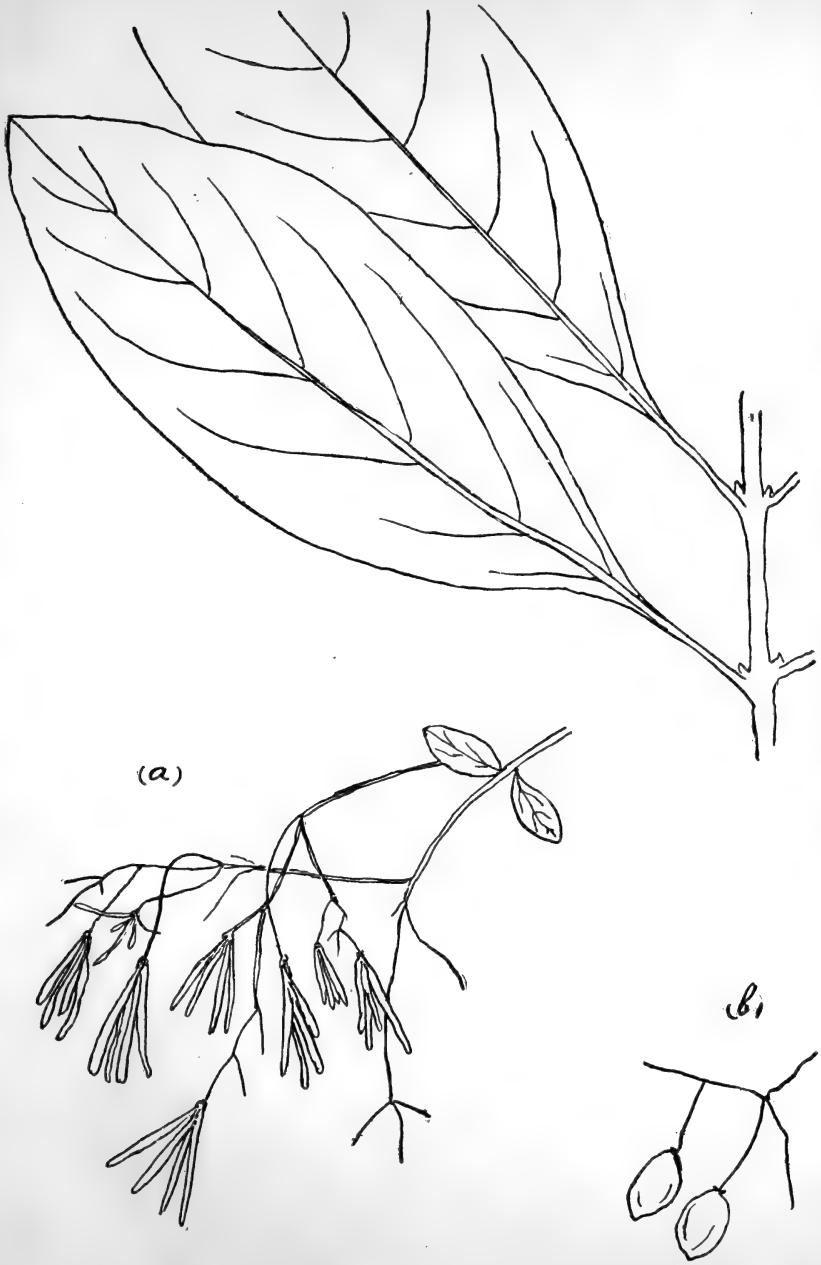


Fig. 88.—Fringe-Tree. (C. Virginica, L.) (*a*) Flower-cluster. (*b*) Fruit.

Genus Ligústrum, Tourn.

Privet. [*L. vulgàre, L.*]

Flowers, small, white, close, in upright pyramid-shaped spikes at the ends of the branches. *Corolla*, four-lobed. *Calyx*, small, minutely four-toothed. *Stamens*, two. *Seed-case*, not adherent to the calyx. May, June.

Leaves, simple, three quarters to two inches long, opposite, edge entire, lance-shape and oval to reverse egg-shape, acute or blunt, very smooth, dark green.

Fruit, rounded, in cone-shaped bunches, two-celled, two- to four-seeded, black, bitter, ripe in July; a berry.

Found, in woods and thickets from New Jersey and New York to Virginia and westward.

A shrub four to eight feet high, naturalized from Europe. It is cultivated for ornament, and in the form of low hedges.

CLASS FIRST—CONTINUED

(*Angiospérmæ*)

Division III

PETALS MOSTLY LACKING

(*Apétalous*)

25. Family LAURÀCEÆ. (Laurel Fam.)

Genus LÍNDERA, Thumb. (Spice-Bush.)

From the name of a Swedish botanist.

Fig. 89.—Spice-Bush. Fever-Bush. Benjamin-Bush. Wild Allspice. *L. Benzòin, Blume.*

Flowers, yellow, small, in almost stemless, lateral clusters, each cluster made up of several minor clusters of four to six flowers, with four early-falling scales at their base, appearing before the leaves. *Corolla*, lacking. *Calyx*, six-parted, the blossoms generally of two forms on different plants; the staminate with nine stamens in three rows, the inner lobed and with glands at their base; the pistillate with fifteen to eighteen undeveloped stamens in two forms. *Style*, one. *Seed-case*, round and not adherent to the calyx. March, April.

Leaves, two to four inches long, simple, alternate, entire, wedge-shape to reverse egg-shape and oval, nearly smooth.

Fruit, red, reverse egg-shape, one-celled, one-seeded; a drupe.

Found, from Ontario and New England southward in damp woods.

An aromatic shrub six to fifteen feet high. The powdered berries have sometimes been used as a substitute for allspice, and the leaves for tea.

Fig. 89.—Spice-Bush. (L. Benzòin, Blume.) (*a*) Flower-clusters.

26. Family THYMELÆÀCEÆ. (Dáphne Fam.)

Genus Dírca, L. (Leatherwood.)

Fig. 90.—Leatherwood. Moosewood. *D. palústris, L.*

Flowers, light yellow, three or four in a cluster at the sides of the branches, appearing before the leaves. *Corolla*, wanting. *Calyx*, tubular, without spreading lobes, its edge wavy or slightly four-toothed. *Stamens*, eight, long and slender, alternating in length. *Style*, one, it and the stamens exserted. *Seed-case*, not attached to the calyx, one-celled, one-seeded. April.

Leaves, three to four inches long, simple, alternate, entire, reverse egg-shape to oval. *Apex*, pointed or blunt. *Base*, sometimes slightly heart-shaped. *Leaf-stem*, short, and covering the leaf-bud at its base. *Bark*, fibrous, and remarkably tough.

Fruit, about one half an inch long, oval, pointed, reddish, one-celled, one-seeded; a berry-like drupe.

Found, in damp woods from Canada to the Gulf.

A much branching shrub, two to five feet high, with white wood, with bark that is leather-like in its toughness. "It has so great strength that a man cannot pull apart so much as covers a branch one half or one third of an inch in diameter." Millers and others use it for thongs, and from the pliant branches baskets are made. The Indians used it for cordage.

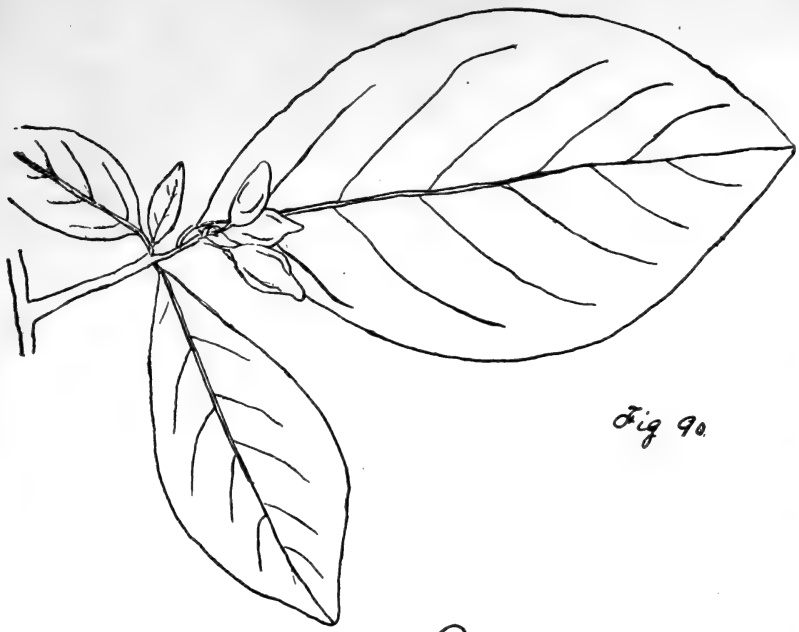


Fig. 90.—Leatherwood. (D. palústris, L.)
Fig. 91.—Shepherdia. (S. Canadénsis, Nutt.)

Genus DÁPHNE, L. (Mezèreum.)

Mezèreum. Dáphne. [*D. mezèreum, L.*]

This species differs from the above chiefly in the following items:

Calyx, purplish-rose, rarely white, with four spreading lobes. *Stamens* and *style*, if present, not exserted.

Leaves, lance-shape.

Found, escaped from cultivation in Canada, New York, and Massachusetts. Introduced from Europe.

27. Family ELÆAGNÀCEÆ. (Oleaster Fam.)

Genus SHEPHÉRDIA, Nutt. (Shepherdia.)

Fig. 91.—Shepherdia. *S. Canadensis, Nutt.*

Flowers, very small, yellowish, nearly stemless, of two kinds on the same bush. *Corolla*, wanting. *Calyx*, four-parted. The *staminate flowers* with eight stamens, in lateral clusters; the *pistillate* often solitary, with one *style*, and with a one-seeded *seed-case* enclosed by, but not adherent to, the calyx.

Leaves, one to two inches long, opposite, entire, oblong or egg-shape, beneath very white-downy and sprinkled thickly with rusty scales. *Branchlets*, and *flowers*, also marked with rusty scales.

Fruit, size of a small pea, round or oval, yellowish-red, pulpy, sweetish, but not edible, one-celled, one-seeded, berry-like; really an akene within the pulpy calyx.

Found, from New York and Vermont westward and northward.

A shrub three to six feet high, curious and ornamental.

28. Family LORANTHÀCEÆ. (Mistletoe Fam.)

Genus PHORADÉNDRON, Nutt. (Am. Mistletoe.)

From two Greek words meaning "thief" and "tree," because of the mistletoe's parasitical growth.

Fig. 92.—American Mistletoe. *P. flavéscens, Nutt.*

Flowers, small, whitish, in spikes in the angles of the leaves, of two kinds, on separate plants. *Corolla*, wanting. *Calyx*, usually threè-lobed. The *staminate flowers* with a sessile anther at the base of each lobe; the *pistillate* with a *seed-case* that is one-celled, one-seeded, and adherent to the calyx.

Leaves, three quarters to one and a third inches in length, simple, opposite, entire, reverse egg-shape to oval. *Base*, slightly pointed or rounded, stemless, thick, fleshy, with three strong veins radiating from the base. *Stem*, brittle at the joints.

Fruit, round, white, the size of a small pea, in spikes and clusters, one-seeded; pulpy, the pulp very sticky; a berry.

Found, from New Jersey to Southern Indiana and southward, growing firmly on the branches of various trees.

A much-branching evergreen parasite, one to one and a half feet high. Its propagation is by help of the sticky pulp, which holds the fruit to the bark where it falls, until the seed takes root. As the plant grows it feeds on the juices of the tree.

In Scandinavian mythology it is recorded that Balder (the Scandinavian counterpart of Apollo) was proof

against anything whatsoever that had its source in either of the four elements, fire, air, earth, or water. But his enemy Loke, the Spirit of Evil, made an arrow out of mistletoe, which grows from none of these things, and with this arrow Balder was slain.

The Druids held in the highest veneration whatever grew on the oak; especially they reverenced the mistletoe. When it was found, two fat bulls were sacrificed beneath it, and a priest, clothed in white, cut it down with a golden knife.

Traces of the ancient esteem for the mistletoe are still found in old English and German customs, such as "kissing under the mistletoe," and its various uses at the Christmas-time. Its sprays were supposed to have magical powers; they were used as charms.

There is a tradition that the cross was made from the wood of the mistletoe, which up to that time was a large tree, but then was condemned to live for evermore as a parasite.

29. Family SANTALÀCEÆ. (Sandalwood Fam.)

Genus PYRULÀRIA, Michx. (Oil-Nut.)

From a Latin word meaning "pear," because of the shape of its fruit.

Fig. 93.—Oil-Nut. Buffalo-Nut. *P. pùbera, Michx.*

Flowers, small, greenish, in short, terminal, few-flowered spikes. *Corolla*, wanting. *Calyx*, five-cleft, sometimes of two kinds on separate plants. *Staminate flowers*, with five stamens opposite the sepals; *pistillate* with the one *style* short and thick, and the *seed-case* adherent to the calyx, excepting at its flat summit, one-celled, and two- to four-seeded. May.

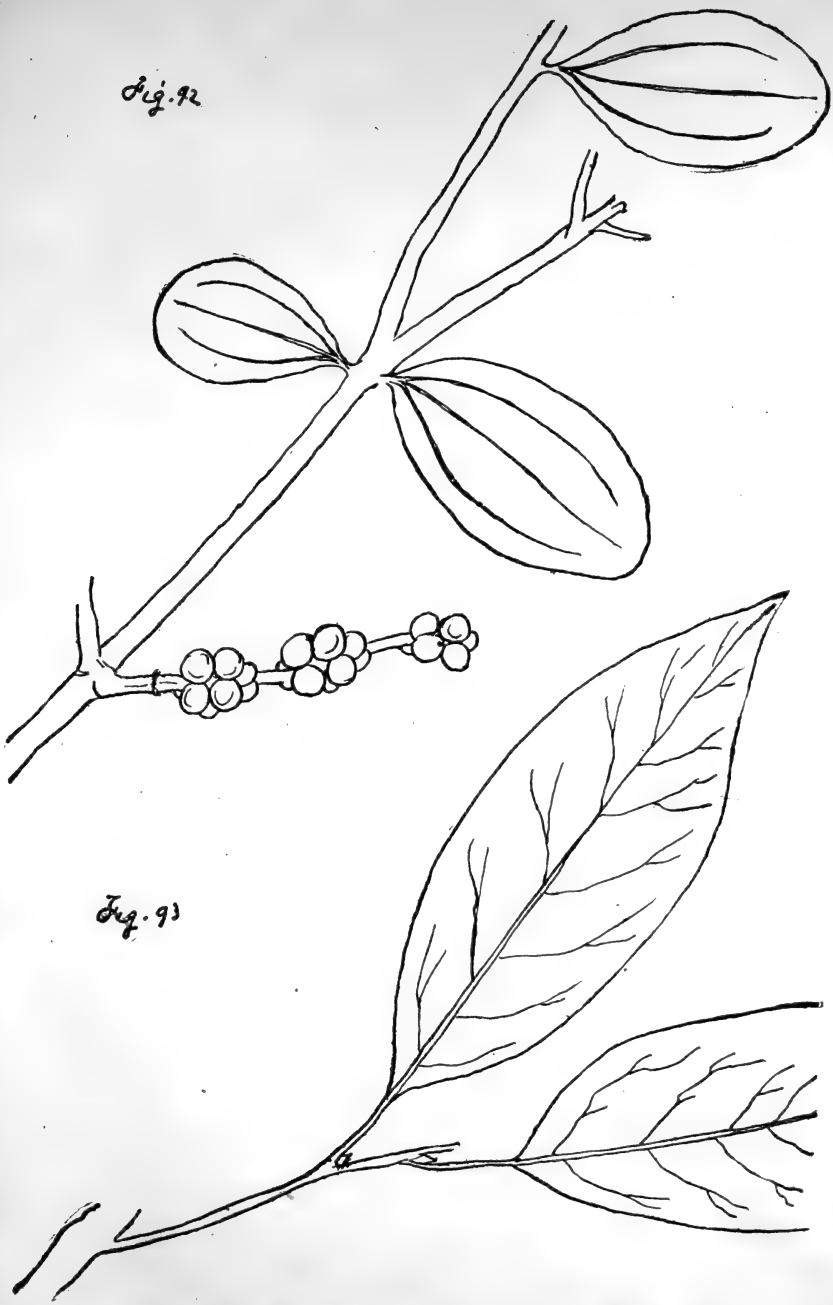


Fig. 92.—American Mistletoe. (P. flavéscens, Nutt.)
Fig. 93.—Oil-Nut. (P. pùbera, Michx.)

Leaves, two to three inches long, simple, alternate, entire, oblong to egg-shape, very veiny, minutely dotted.

Fruit, about one inch long, pear-shaped, fleshy, crowned with the remains of the persistent calyx, one-celled, one-seeded; drupe-like.

Found, from the mountains of Pennsylvania to Georgia.

A shrub three to twelve feet high, with every part, especially the fruit, flavored with an acrid oil.

30. Family MYRICÀCEÆ. (Sweet-Gale Fam.)

Genus MYRÌCA, L. (Bayberry, etc.)

Flowers, solitary, under a scale-like bract, of two kinds: the *staminate* in oblong or cylindrical clusters; the *pistillate* axillary, in egg-shape, oval, or globular clusters. *Corolla*, lacking. *Stamens*, two to eight, somewhat united below. *Seed-case*, free, with two to eight scales at its base, and two thread-like stigmas, one-celled, one-seeded.

Leaves, simple, alternate, entire or toothed, fragrant, resinous-dotted under the lens.

Fruit, one-celled, one-seeded, round to oblong, coated with wax or with resinous grains; a dry, drupe-like nut.

Fig. 94.—Bayberry. Wax Myrtle. *M. cerífera, L.*

Flowers, the two kinds mostly on separate plants, the *staminate* clusters oblong, erect, less than one inch long, on the sides of the last year's twigs, scattered; the *pistillate* clusters oval. May.

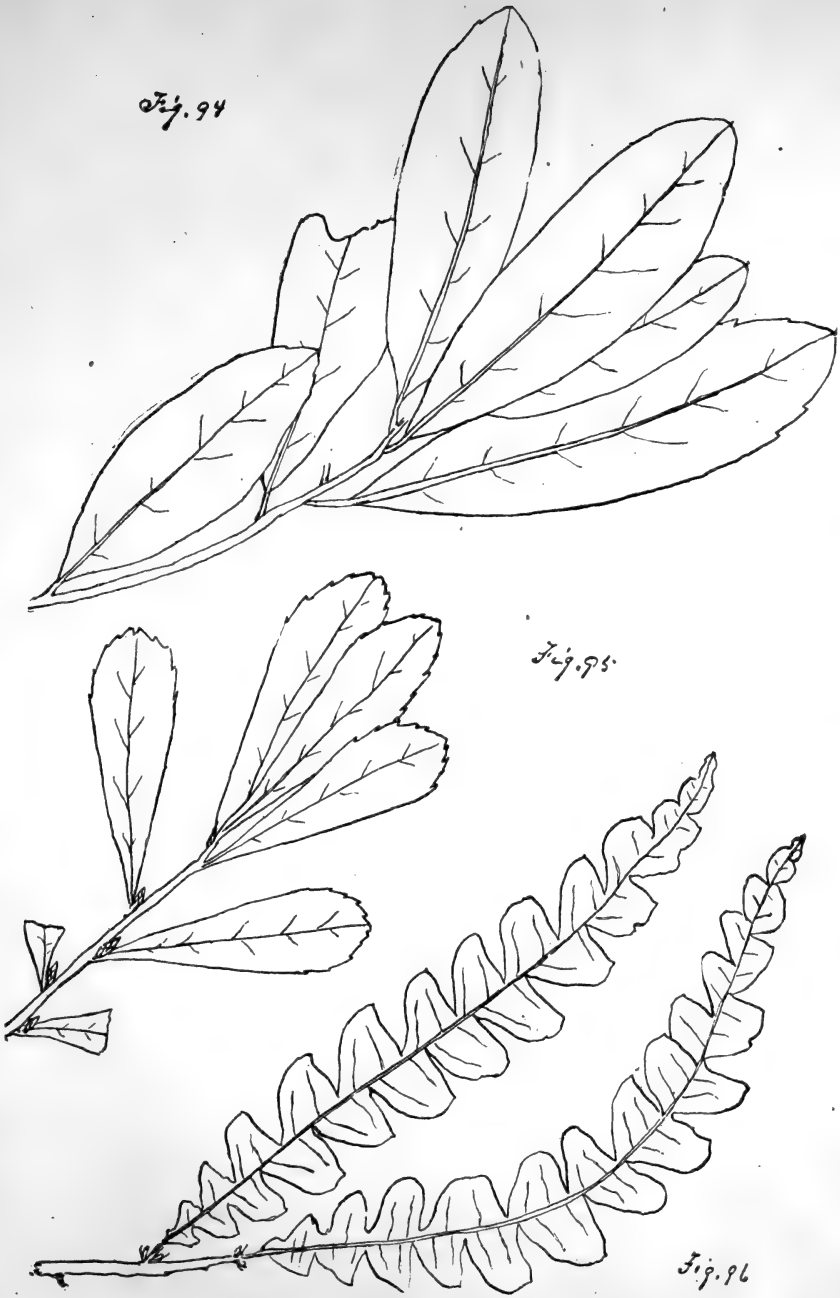


Fig. 94.—Bayberry. (M. cerífera, L.)
Fig. 95.—Sweet-Gale. (M. Gàle, L.)
Fig. 96.—Sweet Fern. M. asplenifòlia (L.) Banks.

Leaves, one and one half to three inches long, smooth, and shining on both sides. *Apex*, pointed or blunt, and tipped with the end of the mid-vein, entire or remotely toothed toward the apex. *Leaf-stem*, distinct.

Fruit, about one eighth inch in diameter, round and nut-like, greenish at first, then blackish, and when ripe crusted with whitish wax, clustered on short stems below the leaves, usually four to nine in a cluster, sometimes remaining in place for two or three years.

Found, near the coast from Nova Scotia to Florida, and on Lake Erie, oftenest on dry, sandy soil.

A compact, much-branching shrub, two to eight feet high, often growing in masses. The wax of the gathered berries, when removed by soaking in boiling water, forms the "bayberry tallow" of commerce.

"The production of myrica wax, or bayberry tallow, has been carried on to a somewhat large extent, mostly for the manufacture of candles and soap. Candles made from this wax, though quite brittle, are less greasy than others, are slightly aromatic, and are smokeless after snuffing. The wax is obtained by boiling the berries and then skimming the water. It saponifies readily with a solution of caustic potash, yielding a fragrant soap. Four pounds of berries yield about one pound of wax.

Fig. 95.—Sweet-Gale. Dutch Myrtle. *M. Gale, L.*

Flowers, the two kinds mostly on separate plants; the *staminate* clusters terminal, one inch or more in length, closely clustered; the *pistillate* clusters axillary, about one eighth of an inch in length, oval.

Leaves, three quarters to one and one half inches long, entire for about two thirds the length, sharp-toothed toward the apex, fragrant when crushed, appearing later than the flowers. *Apex*, blunt or slightly pointed. *Leaf-stem*, very short.

Fruit, round, dotted; two-winged by two thick, egg-shaped scales, crowded in an oblong head; usually two to six nuts in each cluster.

Found, on the borders of ponds from Canada and southward in the mountains, to Carolina.

A branching shrub, three to five feet high.

Fig. 96.—Sweet-Fern. *M. asplenifòlia (L.), Banks.*

Flowers, the two kinds often on the same plant, the pistillate forms in rounded clusters with the seed-cases surrounded by eight narrow, persistent scales. April, May.

Leaves, one to six inches long, narrow, pointed, with large rounded, lobe-like teeth.

Fruit, a small nut, egg-shape or oval, brown, in clusters, and clothed with the lengthened persistent scales. September.

Found, in dry, poor, ground, often in large patches, from North Carolina northward and westward.

A shrub, round-headed, one to two feet high, very aromatic when crushed. It is much used in some localities, medicinally, for summer complaints and for bathing bruises, and in rheumatism.

"The early colonists of Massachusetts, unfamiliar with the innocent qualities of the plant, tell how, in a

journey through the 'wilderness' from Boston to Concord, some of their number were made to faint by the powerful odor of the abundant sweet fern, growing in large patches along their way."—RALPH WALDO EMERSON in *Atlantic Monthly* of January, 1892.

31. Family CUPULÍFERÆ. (Oak Fam.)

Flowers, of two kinds on the same plant: the *staminate* forms in long, slim clusters (or in the beech, in rounded clusters); the *pistillate*, variously arranged. *Seed-cases*, two- to seven-celled, with one to two young seeds in each cell, but all disappearing in fruit excepting one cell and one seed.

Leaves, simple, alternate, toothed or lobed.

Fruit, one-celled, one-seeded; clustered nutlets, or nuts, or acorns.

GUIDE TO THE GENERA.

(1) Bétula (Birch). (2) Álnus (Alder). (3) Córylus (Hazel-nut).
(4) Carpinus (Hornbeam). (5) Quércus (Oak). (6) Castánea (Chestnut).

(1) Genus BÉTULA, Tourn. (Birch.)

Flowers, the *staminate* forms in long, drooping, stemless clusters, golden in spring, appearing with or before the leaves, three blossoms and two small bracts to each shield-like scale; the *pistillate* forms in oblong or cylindrical stemmed clusters, two or three blossoms to each three-lobed bract.

Leaves, simple, alternate, toothed.

Fruit, clustered, broadly winged, scale-like, crowned with the two stigmas; a scale-like nutlet.

Fig. 97.—Low Birch. *B. pùmila, L.*

Flowers, the *pistillate* forms in short, erect clusters; clusters of both forms about one half to three quarters of an inch long.

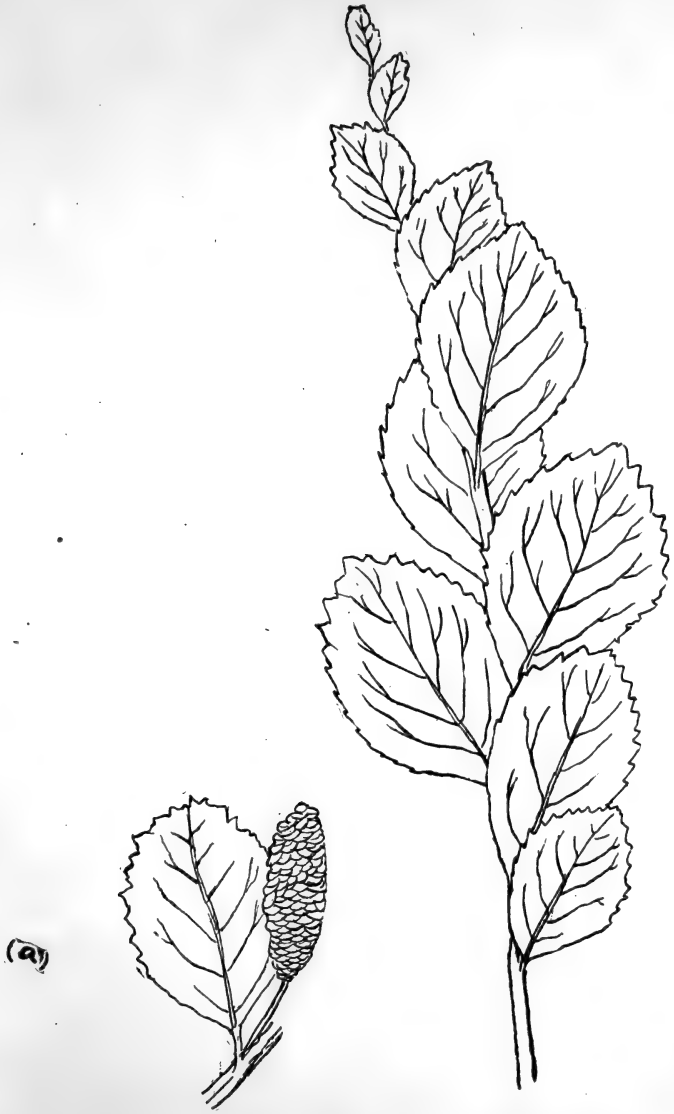


Fig. 97.—Low Birch. (B. pùmila, L.) (*a*) Fruiting cluster.

Leaves, one half to one and one third inches long, rounded or wedge-shape, or sometimes egg-shape. *Bark*, brownish.

Fruit, with its wing mostly narrower than the rest of the nutlet.

Found, in wet ground in Connecticut and New Jersey, and westward, and in the mountains of New England and northward.

A shrub two to eight feet high.

Dwarf Birch. *B. glandulòsa, Michx.*

Flower-clusters and *fruit*, much as in the last.

Leaves, reverse egg-shape to rounded, one half to three quarters of an inch long.

Branches, marked with resinous, wart-like dots.

Found, from the mountains of New England far northward.

A shrub one to four feet high.

B. papyrífera, var. minor, Tuck., is a low form of the "Paper Birch," six to nine feet high, found in the higher parts of the White Mountains.

(2) Genus Álnus, Tourn. (Alder.)

Staminate flowers, in long, drooping clusters with three (sometimes six) blossoms, and four or five small bracts to each shield-shaped scale. *Pistillate flowers*, in oval or oblong clusters, with two or three blossoms to each fleshy scale. *Scales* and *bracts*, woody in fruit.

Leaves, simple, alternate, toothed.

Fruit, in "cones," sometimes winged, scale-like, clustered. A scale-like nutlet.

Green Alder. Mountain Alder. *A. víridis, D. C.*

Pistillate clusters, one half to two thirds of an inch long, on slender stalk, appearing with the leaves. April.

Leaves, two to four inches long, egg-shape to rounded and heart-shaped.

Fruit, with a thin, broad wing. August.

Found, along streams in the Alleghany Mountains to North Carolina, and from Western Massachusetts and New York westward and far northward.

A shrub three to eight feet high.

Fig. 98.—Smooth Alder. *A. serulàta, Willd.*

Flowers, appearing before the leaves; the staminate clusters two to three inches in length, forming drooping tassels of purple and gold, three to five together on short terminal foot-stalks; the fertile clusters usually from the same point, erect, three or four together, one quarter to one third of an inch long, but later enlarging to one third to one half inch long, and becoming hard and cone-like. March, April.

Leaves, two to four inches long, often crumpled between the prominent veins, oval to reverse egg-shape. *Base*, acute or rounded, green above and below, sharp-toothed, sometimes double-toothed, mostly smooth, usually slightly downy on the veins beneath.

Fruit, wingless, egg-shape. September.

Found, common in wet land from Massachusetts westward and southward.

A shrub six to fifteen feet high, often forming thick clumps, the common alder southward. The wood, when large enough, is excellent for fuel. The charcoal from it is preferred to any other in compounding gunpowder.

Speckled Alder. Hoary Alder. *A. incàna, Willd.*

Flowers, with much the same aspect as those of the smooth alder.

Leaves, two to four inches long, egg-shape to broad oval. *Base*, rounded or slightly heart-shaped, or sometimes pointed, mostly downy and hairy beneath, sharp-toothed, sometimes double-toothed.

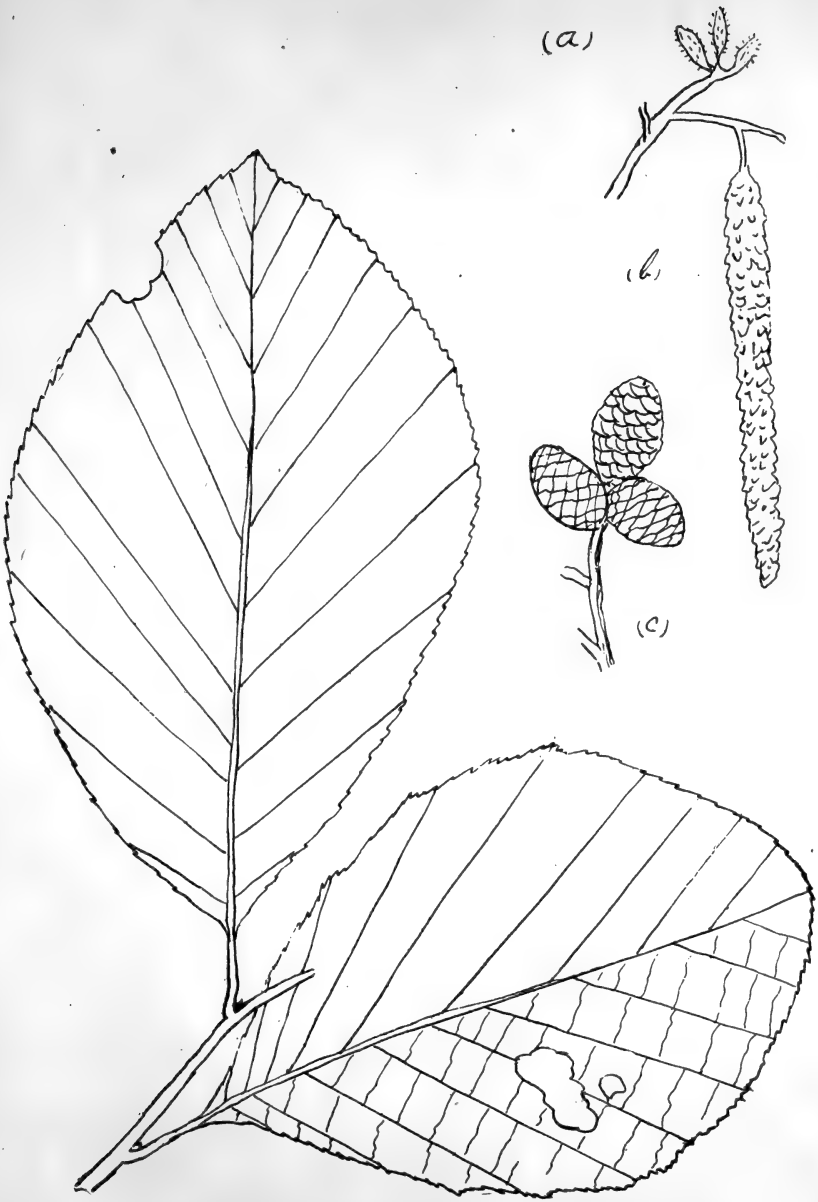


Fig. 98.—Smooth Alder. (A. serulàta, Willd.)
(*a*) Pistillate clusters. (*b*) Staminate clusters. (*c*) "Cones."

Fruit, wingless, slightly margined, orbicular.

Found, in wet land from Massachusetts westward and northward.

A shrub eight to twenty feet high; the common alder northward.

(3) Genus CÓRYLUS, Tourn. (Hazel-nut.)

Probably from a Greek word meaning "helmet" from the bonnet-like covering of the nut.

Flowers, appearing before the leaves, the staminate forms with eight *stamens*, in long, drooping clusters; the pistillate form, several from a scaly bud, each a single adherent *seed-case* tipped with the end of the calyx, with two side bractlets, a style, and two slender stigmas. April.

Leaves, simple, alternate, toothed, folded lengthwise in the bud.

Fruit, the size of a small marble, oval or rounded to oblong, bony, covered with a large, leafy, downy wrap with slashed edges, often in clusters; a bony nut.

Fig. 99.—Wild Hazel-nut. *C. Americàna, Walt.*

Flowers, the staminate clusters two to three inches long, and two to five together. April.

Leaves, three to six inches long, rather coarse, rough above, downy and hairy on the veins beneath, outline variable from egg-shape to slightly reverse egg-shape. *Leaf-stem*, covered with glandular hairs.

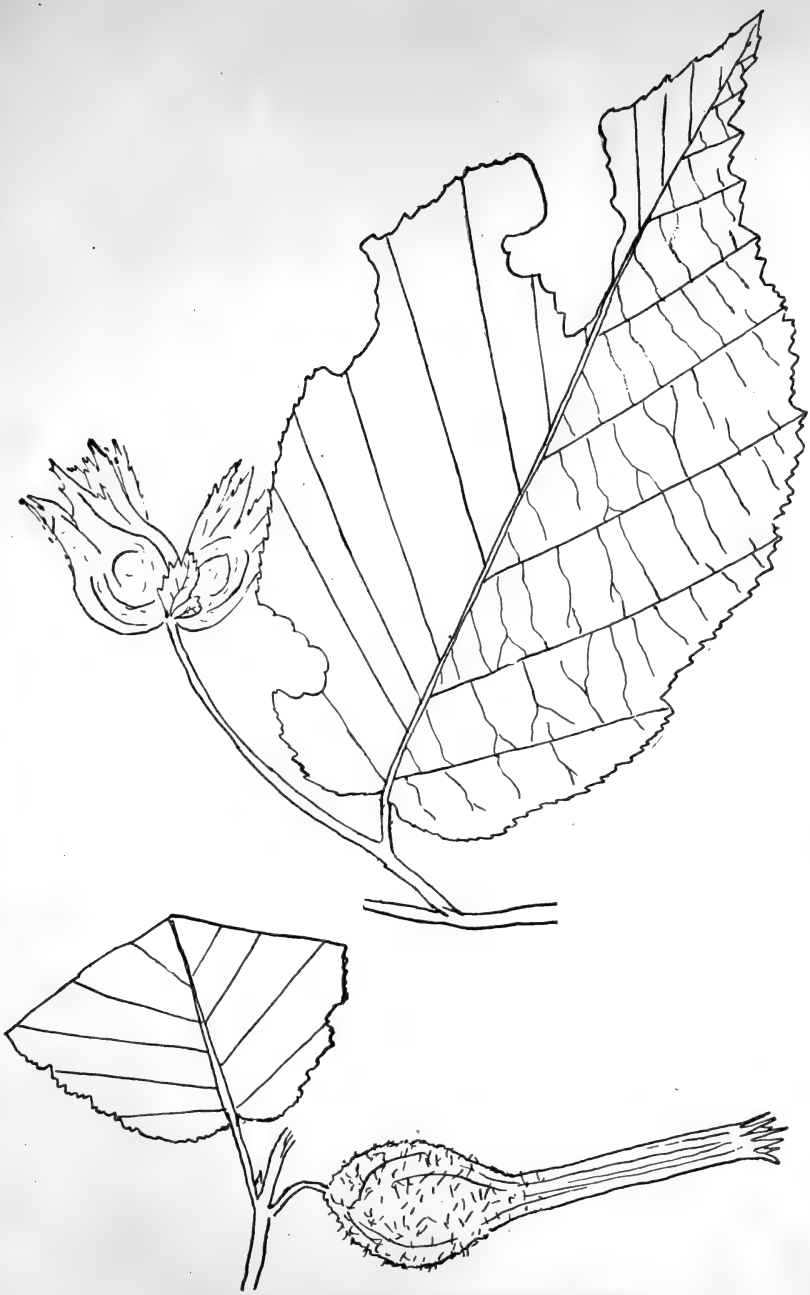


Fig. 99.—Hazel-nut. (C. Americàna, Walt.)
Fig. 100.—Beaked Hazel-nut. (C. rostràta, Ait.)

Fruit, rounded, the wrap about twice the length of the nut, broad, with spreading and coarsely-toothed edge, opening down to the nut. September.

Found, common, often forming clumps along the borders of fields and woods from Canada southward.

A shrub four to eight feet high. Its nuts are of pleasant flavor, but inferior in quality to the English "filberts."

Fig. 100.—Beaked Hazel-nut. *C. rostràta, Ait.*

Flowers, the staminate clusters about one inch long, alone or in pairs. April.

Leaves, much as in the preceding, but oftenest smaller—about three inches or less in length.

Fruit, much as in the preceding, but with the wrap curiously lengthened into a long, tubular beak. September.

Found, from Nova Scotia to New Jersey and westward, and in the mountains southward to Georgia.

A shrub two to six feet high, much less common than the preceding.

(4) Genus Carpìnus, L.

Fig. 101.—Hornbeam. Ironwood. Water Beech. Blue Beech. *C. Çaroliniàna, Walt.*

Flowers, the staminate form with several *stamens* in the axil of a scale-like bract, in drooping clusters an inch, or usually less, in length at the sides of the branches; the pistillate form in numerous pairs, spiked in a loose, terminal cluster, about two inches long. April.

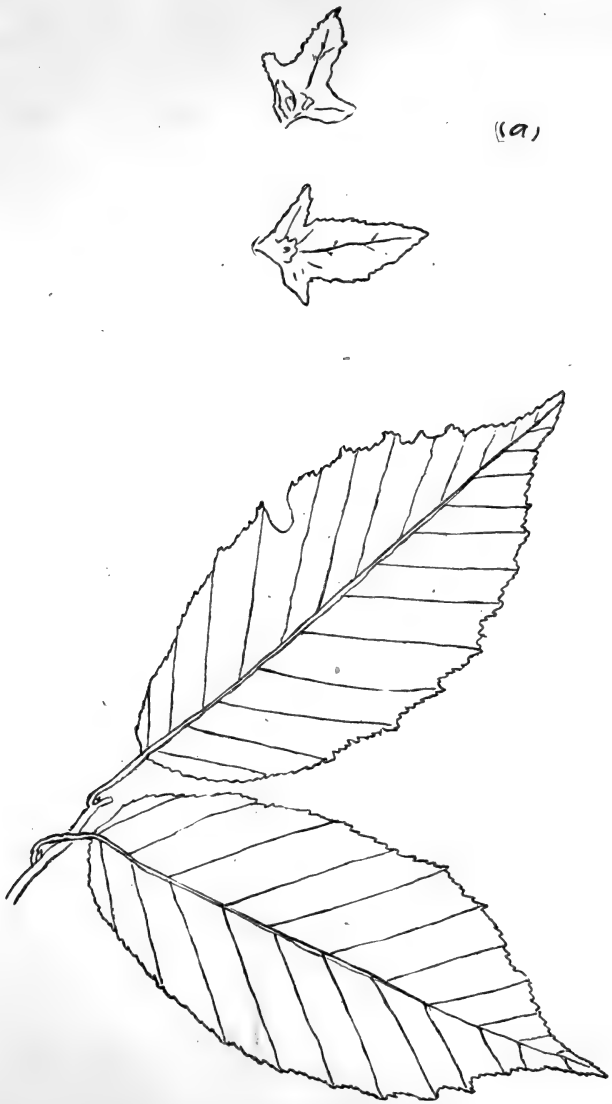


Fig. 101.—Hornbeam. (C. Caroliniàna, Walt.) (*a*) Fruit scales.

Leaves, usually three or four inches long, but with many smaller leaves of varying size on the same branch; nearly smooth, slightly hairy on the straight and distinct ribs, and in their angles.

Fruit, in a loose, drooping cluster, with leaf-like, strongly three-lobed scales; dark, small, egg-shape, placed in pairs base to base; clustered nutlets. October.

Found, along streams and in swamps; quite common north, south, and west; southward often as a tree.

A shrub (or sometimes a small tree) usually ten to twenty feet high, but in the southern Alleghany Mountains sometimes reaching a height of fifty feet. Its wood is white, very compact, and strong.

(5) Genus Quércus, L.

Flowers, small, greenish or yellowish, the staminate form with a two- to eight-lobed calyx, and with three to twelve stamens, in slender, drooping clusters; the pistillate form with a *seed-case* containing three more or less complete cells, and six young seeds (only one of which develops), and with a three-lobed stigma—all in a scaly, bud-like wrap, which becomes the cup of the acorn.

Leaves, simple, alternate.

Fruit, an acorn.

Fig. 102.—Dwarf Chestnut Oak. Scrub-Oak. *Q. Muhlenbérgii, Eng. var. hùmilis, Britton. (Q. prinòides, Willd.).*

Leaves, three to four inches long, with large, or sometimes small wavy teeth, usually four to eight on each side, light green and polished above, whitish or bluish, and fine downy beneath. *Leaf-stem*, one quarter to three quarters of an inch long.

Fig 102.

Fig. 103

Fig. 102.—Dwarf Chestnut Oak. (Q. Muhlinbérgii, Eng. var. hùmilis, Britton.)
Fig. 103.—Bear Oak. (Q. ilicifòlia, Willd.)

Fruit, middle size, abundant, sweet, egg-shape. *Cup*, rounded, with small scales. September.

Found, from Massachusetts westward and southward; not common.

A shrub seldom, if ever, more than three or four feet in height; one of the smallest of the oaks.

Fig. 103.--Bear Oak. Shrub Oak. Scrub-Oak. *Q. ilicifòlia, Willd.*

Leaves, two to four inches long, with three to seven (usually five) angular, often bristle-tipped lobes, beneath downy, especially in the axils of the veins, and very silvery or grayish-white. *Leaf-stem* very variable in length.

Fruit, abundant, oval or egg-shape, about one half inch long, dark brown, marked lengthwise with pale lines. *Cup*, saucer-shape with a top-shaped base. September.

Found, on barren and sandy soil from New England southward; common.

A much branching, straggling shrub three to eight feet high, often growing in masses; called "bear oak," possibly from the liking of bears, when bears were common, for the abundant acorns.

From Note-Book.

February. Bear Oak. The silver-backed, little brown leaves still cling thickly to the crowded and scraggy branches. Most of the many acorns have fallen; a few cups remain in place.

(6) Genus Castànea, Tourn. (Chestnut.)

Fig. 104.—Dwarf Chestnut. Chinquapin. *C. pùmila, Mill.*

Flowers, yellowish-white, appearing later than the leaves.

Calyx, mostly six-lobed; the staminate with eight

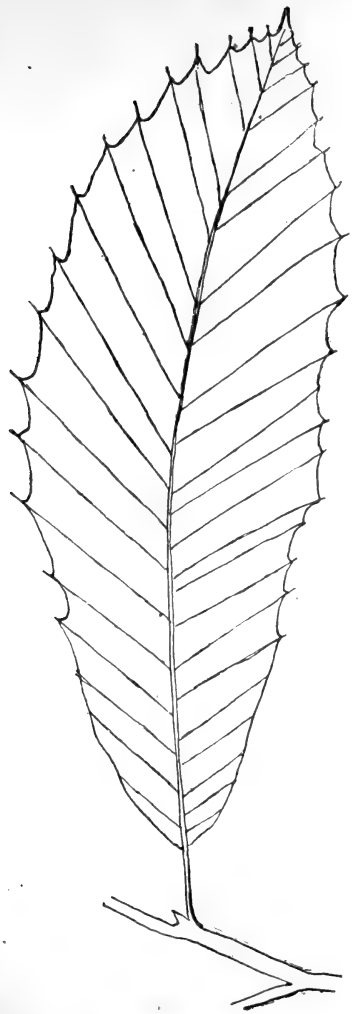


Fig. 104.—Dwarf Chestnut. (C. pùmila, Mill.)

to twenty *stamens*, in drooping clusters two to three inches long; the pistillate, usually three together, in an oval, scaly, prickly wrap.

Leaves, three to five inches long, sharp-toothed, prominently straight-veined, white-downy beneath. *Base*, usually blunt.

Fruit, solitary, oval, pointed, about one half the size of the common chestnut, very sweet, not flattened, enclosed in a very prickly wrap about one and a half inches in diameter; a prickly-covered nut. October.

Found, from New Jersey and Southern Pennsylvania south to Florida and west to Indiana and Texas.

A spreading shrub (or sometimes a small tree) six to twelve feet high.

32. Family SALICÀCEÆ.

Genus SÀLIX, Tourn. (Willow.)

Flowers, in long clusters, one flower to each entire-edged bract; the staminate and pistillate forms on separate plants; the staminate with two to ten (mostly two) *stamens*; the pistillate with *style* short or wanting, and two short stigmas.

Leaves, alternate, usually long, narrow, and pointed.

Fruit, one-celled, many-seeded; a capsule.

Fig. 105.—Long-leaved Willow. *S. longifòlia, Muhl.*

Leaves, very narrow-lanceolate, two to four inches long, tapering at each end, remotely sharp-toothed, nearly stemless.

Found, growing in thick clumps along the coast from Maine to the Potomac; not common.

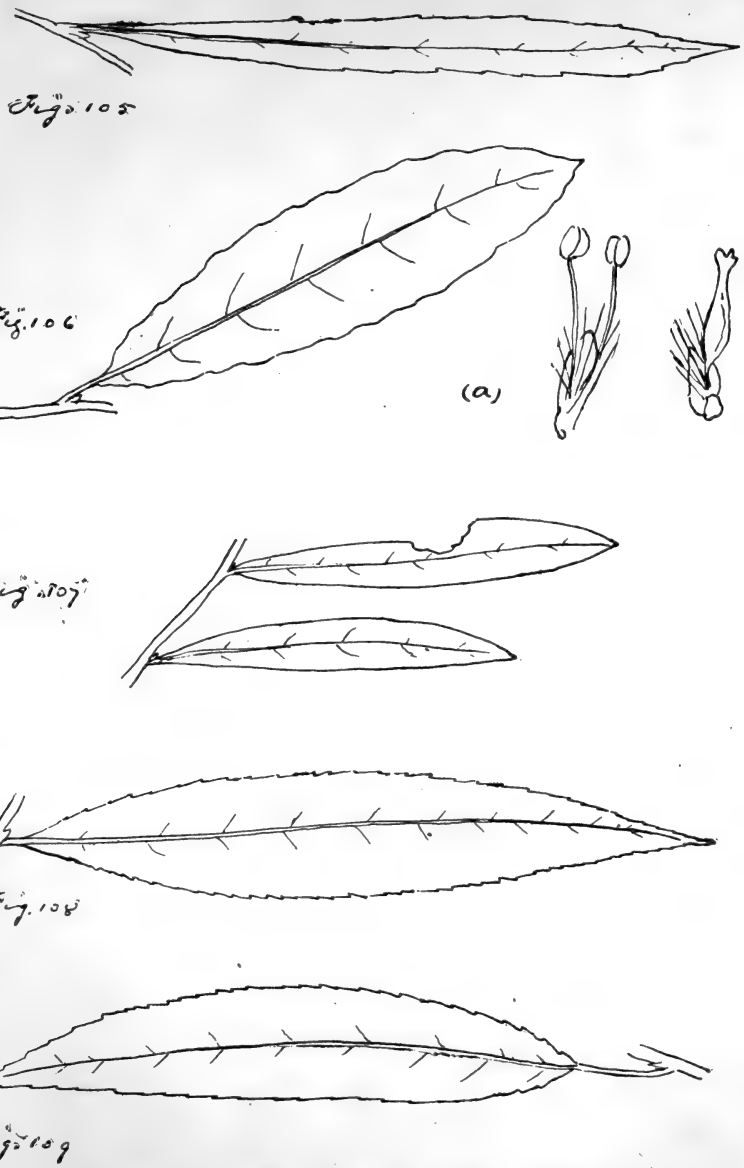


Fig. 105.—Long-Leaved Willow. (S. longifòlia, Muhl.)
Fig. 106.—Prairie Willow. (S. hùmilis, Marsh.)
(*a*) Staminate and pistillate flowers enlarged.
Fig. 107.—Dwarf Gray Willow. (S. trístis, Ait.)
Fig. 108.—Silky Willow. (S. sericea, Marsh.)
Fig. 109.—Long-Stalked Green Osier. (S. petiolàris, Smith.)

A peculiar American species, about two feet high, very variable.

Glaucus Willow. Bog Willow. *S. dìscolor, Muhl.*

Leaves, two to five inches long, one to nearly two inches wide, oblong or reverse egg-shape, pointed, unevenly toothed, teeth remote at the base, becoming finer and closer, and disappearing toward the apex. *Leaf-stem*, one half inch or more in length.

Found, common in damp grounds from Canada to North Carolina; seven to fifteen feet high.

Fig. 106.—Prairie Willow. *S. hùmilis, Marsh.*

Leaves, reverse lance-shape to oblong, pointed, or the lowest ones reverse egg-shape and obtuse; edge entire and often slightly rolled under, or "crinkly," very variable. *Leaf-stem*, distinct.

Found, common in dry fields; three to eight feet high.

Fig. 107.—Dwarf Gray Willow. *S. trístis, Ait.*

Leaves, one to two inches, crowded, very narrow reverse-lanceolate, tapering to a very short *leaf-stem*, edge entire and slightly wavy and somewhat rolled under. *Apex*, pointed or somewhat blunted, under surface often downy.

Found, common in dry ground, one to one and a half feet high, downy, with the leaves often clustered at the ends of the branches.

Fig. 108.—Silky Willow. Gray Willow. *S. serícea, Marsh.*

Leaves, two to three inches long, narrow lance-shape, taper-pointed, finely and evenly toothed, drying black, when young very silky.

Found, in low, wet ground, oftenest east of the Lakes; six to eight feet high.

Fig. 109.—Long-Stalked Green Osier. *S. petiolàris, Smith.*

Leaves, much as in the last, less liable to blacken in drying, and less silky when young.

Found, in low ground, oftenest west of the Lakes.

A bush four to fifteen feet high. The little twigs are used in basket-making.

S. argyrocárpa. *Anders.*

Leaves, one to two inches long, tapering evenly toward both ends, margin wavy-toothed, and slightly rolled back. *Leaf-stem*, short.

Found, in dense patches in high mountain ravines of New Hampshire and in Lower Canada and Labrador; one to two feet high.

Mountain Willow. *S. phylicifòlia, L.*

Leaves, two to three inches long, egg-shape to lance-shape, remotely and finely toothed, very smooth above and below.

Found, in high ravines of the White Mountains, and on Mount Mansfield, Vermont; one to ten feet high.

Fig. 110.—Sage Willow. Hoary Willow. *S. cándida, Willd.*

Leaves, two to four inches or more in length, lance-shape or narrow lance-shape, mostly taper-pointed; edge entire or obscurely toothed at the apex, and rolled under; densely white-downy beneath.

Found, in cold, wet ground from New Jersey westward and northward.

A shrub two to six feet high, hoary, the new shoots white-woolly, the older shoots red.

Fig. 111.—Heart-Leaved Willow. *S. cordàta, Muhl.*

Leaves, long lance-shape, sharp-toothed or nearly entire, not blackening in drying. *Base*, pointed to heart-shape. *Leaf-stem*, one third to one half inch long.

Found, very widely distributed in wet ground.

The most variable of American species.

Fig. 112.—S. balsamífera. *Barratt.*

Leaves, with base broadly rounded, and usually somewhat heart-shaped. *Leaf-stem*, long and slender.

Found, in wet land from Maine to Iowa, and northward, in clumps.

Fig 113.—S. myrtillòides. *L.*

Leaves, one to two inches long, reverse egg-shape to oblong, entire, blunt or slightly pointed, margin rolled under, smooth above and below.

Found, in cold swamps in New Jersey, and from New England to Iowa, and northward.

Bear-Berry Willow. *S. Ùva-úrsi, Pursh.*

Leaves, sometimes elliptical and pointed, sometimes reverse egg-shape and blunt; less than one inch long, slightly toothed, strongly veined, smooth and shining above.

Found, abundantly over the high mountain summits of Northern New England and New York.

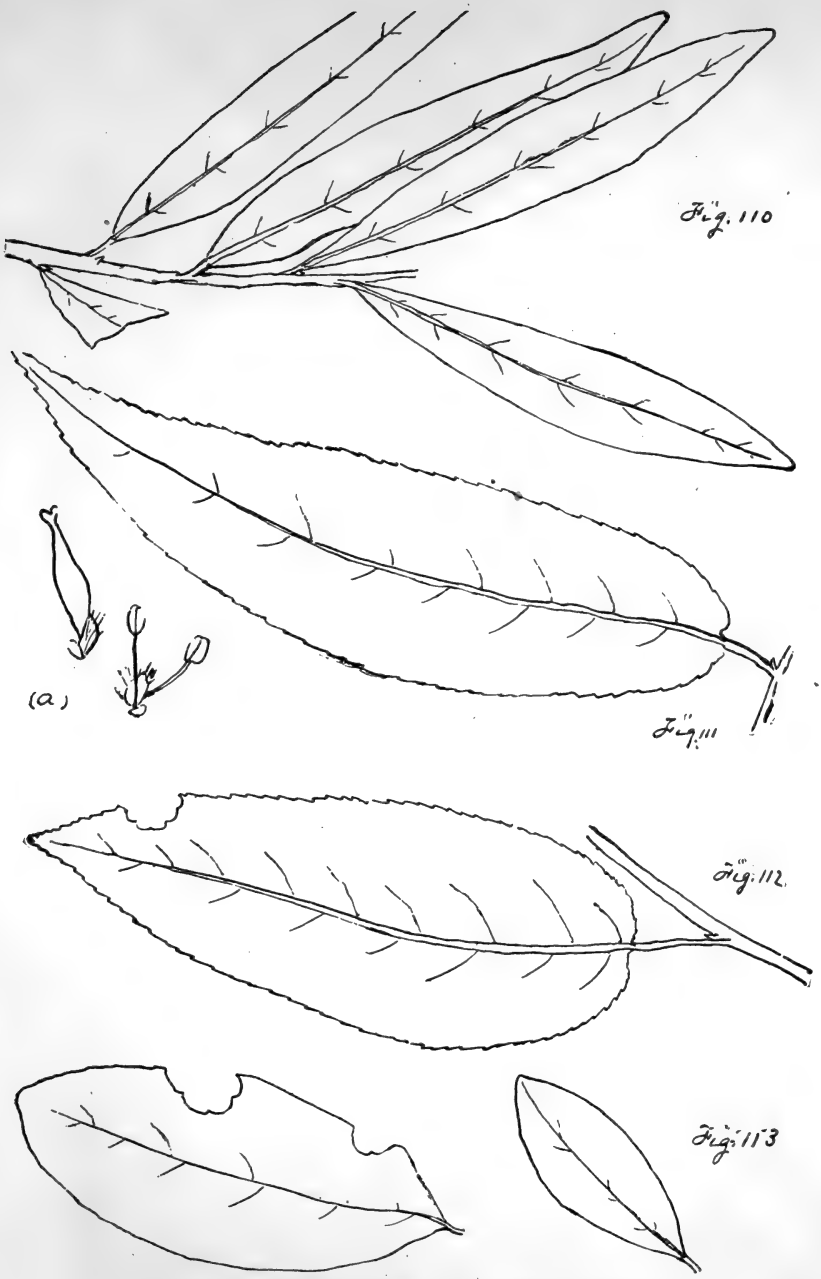


Fig. 110.—Sage Willow. (S. cándida, Willd.)
Fig. 111.—Heart-Leaved Willow. (S. cordàta, Muhl.)
(*a*) Staminate and pistillate flowers enlarged.
Fig. 112.—Pear-Leaved Willow. (S. balsamífera, Barratt.)
Fig. 113.—S. myrtillòides, L. (Two forms.)

A low or prostrate shrub, spreading thickly over a surface from one to two feet in diameter.

Herb Willow. Arctic Willow. *S. herbàceæ, L.*

Leaves, about one inch long, nearly round. *Base*, heart-shaped, toothed, veiny, smooth, and shining.

Found, on the high summits of the mountains of New England and far northward.

The smallest of its family, with half underground creeping stems, and branches that seldom rise more than one or two inches above the surface.

33. Family EMPETRÀCEÆ. (Crow-Berry Fam.)

Genus CORÈMA, Don. (Broom Crow-Berry.)

From a Greek word meaning "broom."

Fig. 114.—Broom Crow-Berry. *C. Conrâdii, Torr.*

Flowers, sometimes in the staminate and pistillate forms, and on different bushes; in terminal heads of ten to fifteen blossoms, each blossom in the axil of a scaly bract. *Corolla*, lacking. *Stamens*, three (rarely four), long and purple. *Style*, slender, mostly three-cleft. *Seed-case*, three- to four-celled, not adherent to the calyx. March, April.

Leaves, evergreen, one quarter inch long, very narrow, almost line-like, short, crowded, margins entire and rolled under.

Fruit, round, minute, with three (sometimes four or five) small nutlets; a drupe.

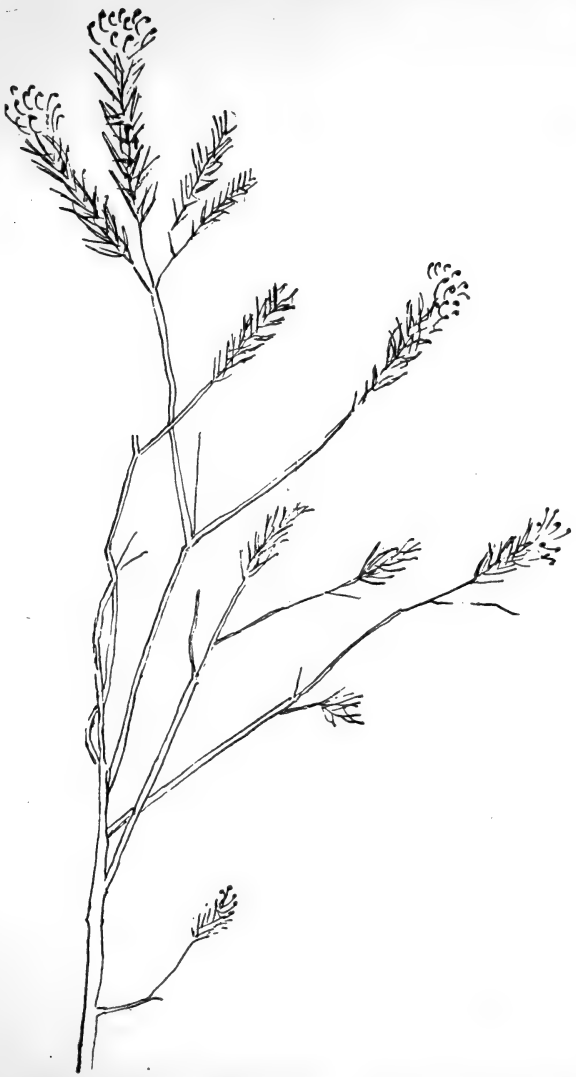


Fig. 114.—Broom Crow-Berry. (C. Conrádii, Torr.)

Found, in sandy barrens and in dry, rocky ground, mostly along the coast from New Jersey to Newfoundland, also in the Shawangunk Mountains of New York.

A much-branched evergreen heath-like shrub, six inches to two feet high.

Genus ÉMPETRUM, Tourn. (Black Crow-Berry.)

From two Greek words meaning "upon" and "a rock."

Black Crow-Berry. *E. nìgrum, L.*

Flowers, reddish, inconspicuous in the angles of the upper leaves, with scaly bracts. *Corolla*, lacking. *Sepals*, three. *Stamens*, three. *Style*, one, very short, with six to nine rays. *Seed-case*, six- to nine-celled, not adherent to the calyx. May, June.

Leaves, about one quarter inch long, evergreen, crowded, lapping each other and covering the branches.

Fruit, round, black, a drupe with six to nine seed-like nutlets.

Found, in Mount Desert and along the coast of Maine, in the high mountains of New York and New England, and far northward.

A spreading and prostrate shrub with a stem one to four feet long.

CLASS SECOND

(*Gymnospérmæ*)

34. Family CONÍFERÆ. (Pine Fam.)

Genus JUNÍPERUS, L. (Juniper.)

Fig. 115.—Common Juniper. *I. commùnis, L.*

Flowers, the staminate and pistillate forms usually on separate plants, in small clusters or cones at the sides of the branches. *Corolla* and *calyx*, lacking.

Leaves, evergreen, five twelfths to three quarters of an inch long, line-like, stiff, sharp, grooved and whitened above, green and ridged below; in clusters (whorls) of threes.

Fruit, bluish-black, one quarter of an inch or more in diameter, with one to three bony, wingless, egg-shaped seeds, ripening the second year from flowering; berry-like.

Found, common on dry land from New Jersey to Canada and Wisconsin.

An evergreen shrub, usually low and flat in large beds, with many spreading or drooping and rooting branches, yet sometimes rising six to eight feet in pyramidal form. The sweetish, turpentine-flavored berries are medicinal—diuretic and stimulating.

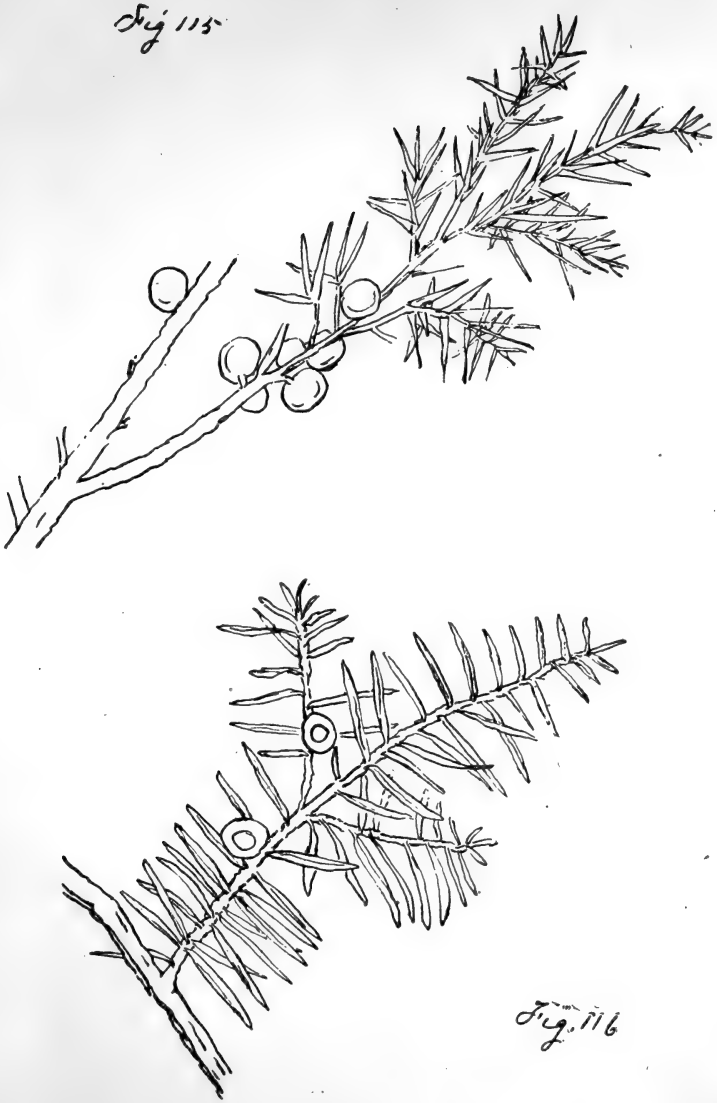


Fig. 115.—Common Juniper. (J. commùnis, L.)
Fig. 116.—American Yew. (T. Canadénsis, Willd.)

Var. alpìna, Gaud., is a prostrate form with leaves less spreading, and but one sixth to two sixths of an inch in length; found from Maine to Minnesota, and northward.

Prostrate Juniper. *J. Sabìna, L., var. procúmbens, Pursh.*

This variety differs from the preceding chiefly in the following items:

Leaves, mostly opposite, a part awl-shaped and loose, the others scale-like and close to the branch and with a resinous gland on the back.

Fruit, on a short, curved stem.

Found, on rocky banks, borders of streams, etc., from New England to Northern Minnesota, and northward.

A prostrate or sometimes creeping shrub.

Genus TÁXUS. (American Yew.)

From a Greek word meaning a "bow."

Fig. 116.—American Yew. Dwarf Yew. Ground Hemlock. *T. Canadénsis, Willd.*

Flowers, at the sides of the branches, the staminate and pistillate forms usually on separate plants; the *staminate* form small and rounded, consisting merely of eight to ten stamens; the *pistillate*, solitary, consisting of an erect seed with a ring-like disk which expands and becomes cup-like, and finally pulpy and drupe-like, nearly covering the nut-like seed. May.

Leaves, evergreen, one half to two thirds of an inch long, line-like, stiff, sharp, flat, green above and below, arranged along the stem in two rows.

Fruit, red, about the size of a pea, slightly hollowed and open at the top, showing the black seed within; drupe-like. August, September.

Found, in shaded places, especially under other evergreens, from New Jersey westward and northward.

A low, straggling evergreen bush two to three feet high, often forming broad, flat clumps. Its wood is yellowish-brown, tough, and elastic. It was often used by the Indians in making their bows.

SHRUBS NOT ELSEWHERE NAMED.

Prùnus angustifòlia, Marsh.
Prùnus cuneàta, Raf.
Spirǽa Virginiana, Britton.
Rùbus negléctus, Peck.
Rùbus Millspàughii, Britton.
Rhododendron canéscens (Michx.), Porter.

"We see here a perpetuall Spring,
A gallant flowering May,
Which month is painter of the world,
As some great Clerks do say.
Rejoice in God . . .
Who thus hath lent the strength,
And eke inspirde thee with such grace,
To end this worke at length ;
And doubt not but herein thou hast
Both pleasèd God and man :
Happie art thou in doing this,
Happie when thou began."

"Thomas Thorney, to his learned friend and loving brother in Art, M. John Gerard."

(Quoted from Gerard's *Herball*, London, 1597.)

EXPLANATION OF TERMS, ETC.

EXPLANATION OF TERMS.

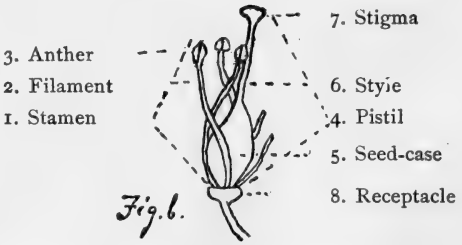
I.

Shrubs, as distinguished from trees, are those species which, as a rule, do not spring from the ground with a single branching trunk.

II.

THE FLOWER.

(1) The flower, when complete, is composed of *petals* Fig. *a* (1); *sepals*, Fig. *a* (2); *stamens*, Fig. *b* (1), with *filament*, Fig. *b* (2), and *anther*, Fig. *b* (3); *pistil*, Fig. *b* (4), with *seed-case*, Fig. *b* (5); *style*, Fig. *b* (6), and *stigma*, Fig. *b* (7).



These parts are supported by the *receptacle*, Fig. *b* (8). The *corolla* (crown) is the circle of the petals; the *calyx* (cup) is the circle of the sepals.

(2) The flower is *pistillate*, when the pistil is present and the stamens are lacking; *staminate*, when the stamens are present and the pistil is lacking.

(3) The seed-case is *free*, when it is not attached along its sides to the calyx; *adherent*, when it is so attached.

(4) The flower is *terminal*, when it is at the end of a branch; *axillary*, when it springs from the base of the leaf-stem, *i. e.*, from the "axil" of the leaf.

III.

THE FRUIT.

The fruit consists of the ripened seeds and their wraps. For the different kinds see the Fruit Guide, page 29.

IV.

THE LEAF.

(1) A leaf is *simple*, when it is of one piece, Fig. *d*; *compound*, when there are two or more entirely distinct parts, called *leaflets* on the one leaf-stem, Fig. *c*.

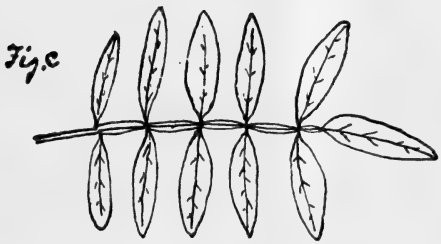
A compound leaf is *feather-shaped*, when the leaflets are placed along the sides of the leaf-stem, Fig. *c*; *hand-shaped*, when all the leaflets radiate from the end of the leaf-stem, like fingers from the palm of the hand.*

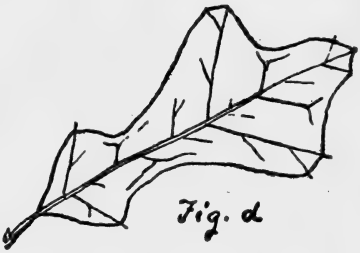
(2) The leaf is *entire*, when its edge is an even line without indentations; *toothed*, when it is set with an indefinite number of sharp or blunt teeth; *lobed*, when the indentations are deep and of a definite number, Fig. *d*.

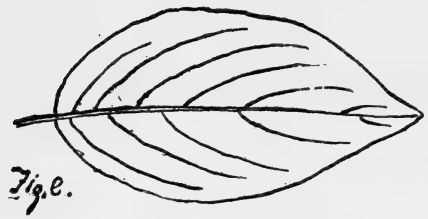
*NOTE 1.—Compound leaves may be once, twice, or three times compound.

NOTE 2.—The leaflets of a compound leaf can be distinguished from a simple leaf by the absence of leaf-buds from the base of their stems.

(3) The leaf is *needle-shaped*, or *line-shaped*, when it is very narrow, or sometimes scarcely more than a line, *e. g.*, Juniper and Yew; *lance-shape*, when it is much longer than wide, and gradually tapering to a point, *e. g.*, most Willows; *inversely lance-shape*, when gradually tapering down instead of up; *egg-shape*, when it is of the general shape of an egg, with the broadest part below the middle, but without regard to the form of the base and the apex, Fig. *e*; *inversely egg-shape*, when it is the shape of an







egg, but with the broadest part above the middle; *oval*, with the broadest part at the middle.

(4) The leaf at its apex may be *pointed*, *taper-pointed*, *bristle-pointed* (when it terminates in a bristle), Fig. *d*, *blunt* or *rounded*.

(5) The leaf at its base may be *squared*, *rounded*, *pointed*, *wedge-shape* (when it tapers to a point by straight lines), or *heart-shape*, Fig. *f*.

(6) The leaves as arranged upon the branch may be *alternate*, when they follow one another upon different

sides of the branch; *opposite*, when they are in pairs and on opposite sides of the branches; *indeterminate*, when they are closely crowded up and down the branches, *e. g.*, Hudsonia and Yew.

V.

(1) *Stipules* are appendages of the nature of a leaf, but of various forms, found in some plants in pairs at the base of the leaf-stems, *e. g.*, in the Rose.

(2) *Bracts* are small appendages of the nature of a leaf, but of various forms, found oftenest in connection with, or just below, the calyx, *e. g.*, in Leucóthoë.

(3) The *axil* of a vein or a leaf is the angle formed with another vein or with a branch.

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